Towards Sustainable Development

2002 Progress Report

ONTARIO POWER GENERATION

KEY PERFORMANCE INDICATORS

Recognizing the relationship between good stewardship and good business, in 1999 OPG committed to becoming a sustainable development energy company. Since 1999 we have published an Annual Sustainable Development Progress Report, this being our fourth, that enables stakeholders to assess our progress.

Key sustainable development indicators regarding OPG's 2002 performance include:

- approximately two-thirds of our energy generation was based upon nuclear and hydroelectric sources (these sources are virtually free of emissions causing smog, acid rain or global warming).
- placed into operation our first selective catalytic reduction (SCR) unit at Lambton Unit 3, and made progress on three other units, which will be in operation by the end of 2003. All four units are expected to reduce annual emissions of nitrogen oxides by up to 25 per cent across our entire fossil fleet.
- planted one millionth tree in Ontario and committed to planting one million more by 2007, thus restoring forest habitat and offsetting about 1 million tonnes of CO_2 during the lifetime of the trees.
- partnered with a business consortium (Cameco Corporation, TransCanada Pipelines and BPC Generation Infrastructure Trust) to open Ontario's first wind farm, the Huron Wind project, near Kincardine in Bruce County. Capacity of the farm is nine megawatts, derived from five wind turbines.
- contributed to the creation of Canada's new Nuclear Waste Management Organization.
- involved in major initiatives in biodiversity, clean-coal research, fuel-cell development, mercury emissions reduction and the financing of alternative energy technologies.
- supported, through our Corporate Citizenship Program, over 600 community initiatives in 2002 (and over 1,800 since 1999). Our support is directed at community education, scholarships, environmental and youth groups, and youth sports sponsorships.
- contributed $600,000 toward the new Durham Regional Cancer Centre.
- announced the location for the first demonstration, on a commercial basis, of the world's largest solid oxide fuel cell power plant, at the University of Toronto's Mississauga campus.
- contracted to purchase nine million tonnes of carbon dioxide emission credits to be used toward voluntarily reducing greenhouse gas emissions.
- participated in the World Summit on Sustainable Development in Johannesburg, where OPG's CEO, Ron Osborne, spoke at the Business Day event.

Key Performance Indicators 1999-2002

Indicator	2002	2001	2000	1999
Acid Gas Emissions per Unit of Energy Production (tonnes/GWh-net)	1.63	1.60	1.58	1.47
Green Power Production as a percentage of total production	0.62%	0.58%	0.45%	0.41%
All Injury Rate -- Recordable Injuries per one million hours worked	7.8	8.91	10.1	15.7

TABLE OF CONTENTS

Message from the President and the Vice President, Sustainable Development 2
Corporate Priorities 5
Environmental Performance 6
External Stakeholder and Employee Relations 22
Adding Economic Value 30
Awards 36
Looking Forward 38
Auditor's Report 39
Glossary 41
Appendices 41
The Sustainable Development Policy 52

Company Profile

103-06364/

Ontario Power Generation (OPG) is an Ontario-based electricity generator whose principal business is the generation and sale of electricity in Ontario and to interconnected markets. Our focus is on the risk-managed production and sale of reliable electricity from our competitive generation assets. OPG's goal is to be a premier North American energy company, while operating in a safe, open and environmentally-responsible manner.

As of December 31, 2002 OPG's electricity generating portfolio had a total in-service capacity of 22,211 megawatts (MW). This consisted of two operating nuclear stations with a capacity of 5,588 MW (a third nuclear station with a capacity of 2,060 MW was laid up); six fossil-fueled stations with a capacity of 9,700 MW; and 36 hydroelectric stations and 29 EcoLogoM-certified green power hydroelectric stations, with a capacity of 6,923 MW. In 2002, OPG generated 115.8 terawatt-hours (TWh) of electricity.

OPG also owns approximately 2.5 MW of wind power, and OPG's share of the Huron Wind joint venture is approximately 4.5 MW of capacity.

Two nuclear stations, formerly operated by OPG, are leased on a long-term basis to Bruce Power L.P.

Message from the President of OPG and the Vice President, Sustainable Development

Messages

Welcome to OPG's fourth annual report on sustainable development. This report charts the progress we have made in 2002 in living up to our commitment to remain a sustainable development energy company.

We're sometimes asked to describe what sustainable development means at OPG. In essence, it means we're committed to minimizing our impact on the environment; creating a safe working environment; creating economic success for ourselves and our stakeholders; and to contributing to the quality of life in the communities we serve. This definition is very inclusive, and rightly so, because sustainable development is about more than being just good to the environment. It's also about advancing the economic and social well-being of the communities in which OPG operates (also refer to The Sustainable Development Policy, p. 52).

We believe our commitment to sustainable development is making us a good company – in the broadest sense of the word. By driving us to operate in a more accountable, transparent and socially responsible manner, it inevitably strengthens our ethical performance as a business. In a world where environmental stewardship, economic growth and social improvement are intimately connected, sustainable development is the right thing to do.

Our focus on sustainable development is also good business – helping earn us the trust and respect of customers, employees and the communities with whom we share common values. This translates into improved customer loyalty, a more engaged and committed workforce, and greater acceptance and approval within the communities where our plants operate. In short, sustainable development delivers tangible, bottom-line benefits to our company, which contribute significantly to our business success.

2002 Achievements

As you will note in this report, our sustainable development record, while not perfect, is on the upward curve.

Overall, we are pleased with our sustainable development performance in 2002. As noted under "Key Performance Indicators" (highlighted on the inside front cover) and throughout this report, our successes are diverse in nature. For example, in order to meet regulatory requirements, we made excellent progress on installing advanced clean air-technologies on two of our fossil-fueled stations. We continued to support and implement a wide range of biodiversity and environmental management initiatives across the province. We continued to enhance performance of our smog and acid gas emissions-free nuclear fleet, reflected in the decision of the Canadian Nuclear Safety Commission to renew the operating licence

of our Darlington station for a period of five years -- a first for the Canadian nuclear industry. The opening of OPG's (and Ontario's) first wind farm, Huron Wind, expanded our green power portfolio. We also supported hundreds of community initiatives as part of our commitment to communities where we operate plants. We are especially proud of the support shown to us by our site communities, several of whom honoured us with awards acknowledging our environmental and community commitments.

Challenges

2002 was also a year of challenge and disappointment. We experienced our most serious setback in the area of safety when three individuals lost their lives in two separate incidents near or at our facilities. In June, a mother and her son drowned near our Barrett Chute Generating Station; and in October, an OPG employee was fatally injured in a workplace accident at our Nanticoke generating station. In response to these tragedies, we immediately conducted full reviews of all our safety systems and programs and launched an additional major public water safety campaign across Ontario. Our goal through these measures is to prevent similar events in the future and to further reinforce our commitment to safety excellence.

We were also disappointed by the delay in returning to service the first unit of our Pickering A nuclear station, as well as by a number of missed performance targets in the area of environmental compliance.

Clean Air

For OPG, an important and ongoing sustainable development practice is the fact that two-thirds of our generation is produced by nuclear and hydroelectric sources, which are virtually free of emissions causing smog, acid rain or global warming. Every year, our nuclear stations alone displace the equivalent of 45,000 tonnes of nitric oxide (NO), 156,000 tonnes of sulphur dioxide (SO_2) and 39 million tonnes of carbon dioxide (CO_2). The return to service of our Pickering A nuclear station will enable us to reduce air emissions even further. At our hydroelectric stations, we are investing $300 million over the next five years on upgrades and refurbishment to significantly enhance the performance of these clean, low-cost energy facilities. Approximately $1.1 billion has been

spent on these upgrades since 1990, which have added 372 MW of air emissions-free power to our generation portfolio.

Our commitment to reducing air emissions is especially apparent at our fossil-fueled stations, where four Selective Catalytic Reduction (SCR) units are being installed at the Nanticoke and Lambton facilities. One of these units is already operational; the rest will be operating by the end of 2003. All four SCRs are expected to reduce nitrogen oxide emissions by up to 12,000 tonnes annually, or up to 25 per cent of our current fossil-generation fleet's emissions. That's roughly equivalent to the environmental benefit of taking 600,000 cars off the road. We are investing a quarter billion dollars in SCRs as part of our ongoing commitment to clean air. This investment is in addition to the roughly $2 billion already invested in environmental improvements at our fossil-fueled plants since the early 1980s. We are also involved in major research initiatives into clean-coal technologies and mercury emissions reduction.

Community

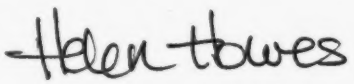
Sustainable development at OPG also means being active in the life of the communities where we operate. Through our Corporate Citizenship Program we supported over 600 local community initiatives in 2002. These included local educational programs, youth scholarships, youth and community sports groups, and environmental projects with a social focus, such as the restoration of the Second Marsh wetlands in Oshawa, Ontario.

Our community commitment can also take the form of capital investment, as it did last year when we announced construction of a new warehousing facility and completed construction of a new office building to accommodate 450 nuclear employees. Both of these facilities are in Durham Region. In addition, we launched our fourth "Neighbourhood Walk," where over 100 employee-volunteers at our Lambton station, near Sarnia, visited 3,000 area homes to provide residents with information about our operations and listen to their feedback. Local initiatives like these are a critical part of our sustainable development focus, enabling us to continue to make significant contributions to the success of our site communities – whose trust and acceptance are essential to our success.

The programs and initiatives described in this report represent OPG's sustainable development record for the year 2002. We are proud of the many successes recorded here and are committed to increasing their number. We have also fallen short in some areas, and we are committed to finding solutions that ensure our performance improves.

Our promise to you is that as we continue to build an efficient, competitive and profitable energy company, we will continue to factor sustainable development considerations into our business decisions. Our success as a business cannot – and will not – be achieved unless we are equally successful in meeting our environmental, economic and social obligations to the broader community. This report is intended to demonstrate how well we are living up to this ideal. Please read it with this purpose in mind and assess us accordingly.

Ron Osborne
President and CEO



Helen Howes
Vice President Sustainable Development

OPG's operations are based on fundamental principles that we strive to meet every day. These principles help us to ensure that employee and public safety remain our foremost priority, complemented with a focus on developing our competitive assets, meeting the needs of our customers, addressing our environmental responsibility, and contributing to the economic and social fabric of the communities in which we operate.

Corporate Priorities

Within the context of OPG's long-term plan for business success we will focus on key areas of performance in 2003. Notably, we will continue to put safety first in all that we do, we will continue to return the Pickering A station to service, and we will continue to increase the production efficiency of our electricity generation operations.

Safety

Protecting public safety and keeping our employees safe at work are areas where we strive for continuous improvement. Since our creation in 1999, we have made major improvements in our employee safety measures. The all-injury rate (injuries per million hours worked) has improved by close to 50 per cent between 1999 and 2002; and the accident severity rate has been steadily improving at many of our facilities. In 2002, OPG received a Silver Award of Excellence from the Canadian Electricity Association for its second consecutive year of top quartile safety performance within the Canadian electricity sector.

The importance of safety was brought home to us, tragically, in two separate accidents in 2002. Two members of the public lost their lives near our Barrett Chute hydroelectric station. An employee also lost his life at our Nanticoke coal-fueled station. These accidents affected us and underscored our focus on safety.

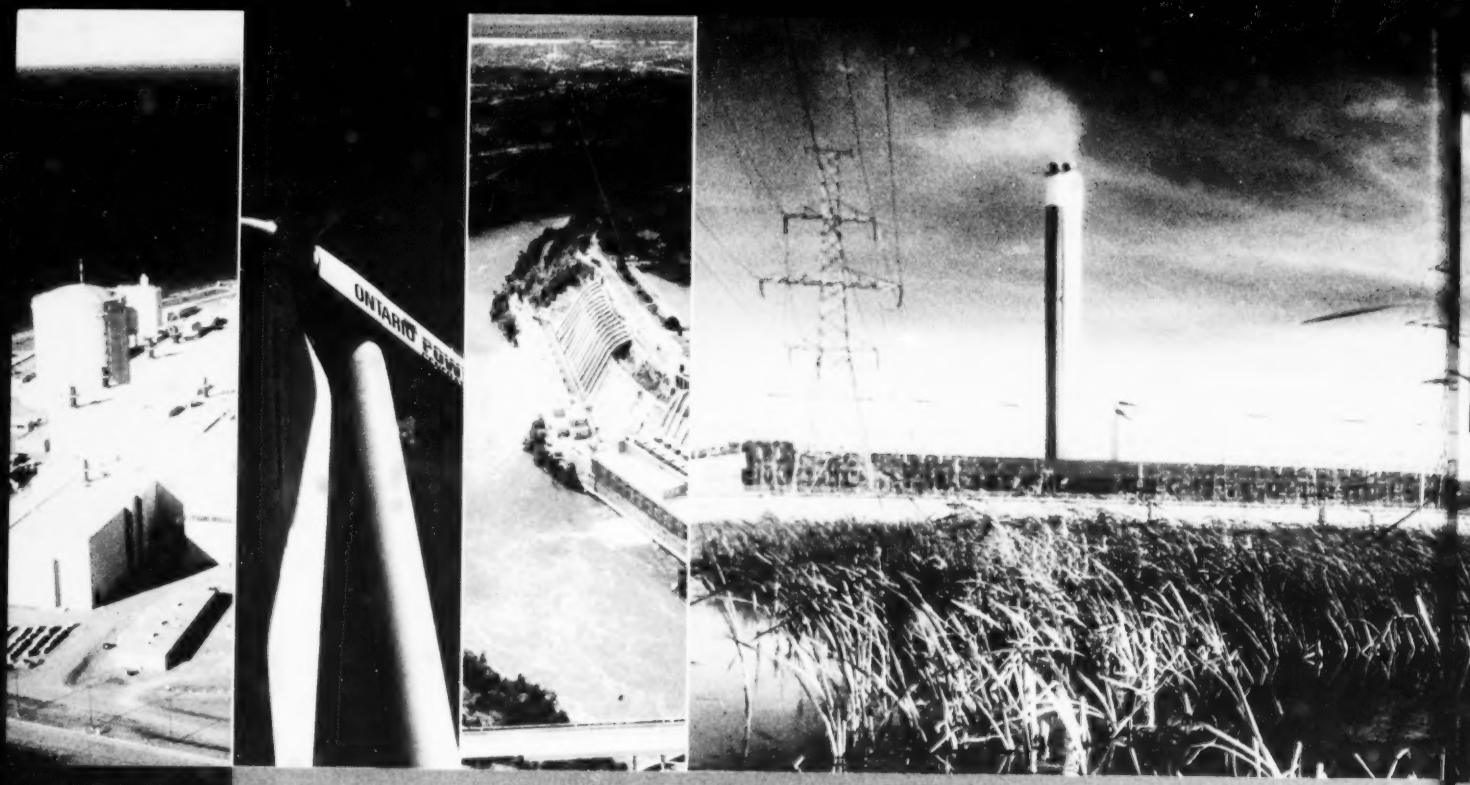
During 2003, we will continue our focus on improving safety at our generating stations through the installation of audible warning systems and physical barriers as well as an increase in our already extensive public education program. We will further intensify our efforts in the area of employee and contractor safety by developing and implementing action plans to address high risks across the company. We will not be satisfied until we are accident free.

Pickering A

During 2002, we were disappointed by the delay and cost associated with the return to service of our Pickering A nuclear station. On a positive note, during the past year many of the problems responsible for the delay were identified and addressed. Accordingly, we remain confident that the safe and timely return to service of the first unit will be during the summer of 2003.

Improved Competitiveness

The move to competition in the Ontario electricity market, which began in May 2002, provides opportunity for efficient generators and marketers of power to produce and sell energy at competitive rates and to grow through investment in power generation assets. The ability of OPG to take advantage of the opportunities depends on its ability to operate its generating facilities competitively, to provide the products and services customers desire and to manage commodity price risks. OPG's portfolio of generation assets is well balanced and diversified in terms of technology, fuel type, market and dispatch flexibility. During 2003, OPG will continue to enhance the cost competitiveness of its plants through improvements in efficiency, productivity, capacity and reduction of airborne emissions.



Environmental Performance

Accountability for Sustainable Development

Accountability for sustainable development at OPG rests with the President, who is accountable to the Board of Directors – and the Board's Environmental, Health and Safety Committee – for making certain the company manages the environmental, social and economic aspects of its business. Overall, the objective is to prevent and minimize environmental impacts, and ensure that OPG complies with environmental laws, regulations and voluntary commitments.

A comprehensive review of OPG's activities, products and services isolated six specific aspects of the business that can interact with the environment in a significant way: air emissions; conventional, hazardous and radioactive wastes; water flow and effluent discharges; material and chemical storage; land use and remediation; and the use of natural resources.

Everyone at OPG is accountable for managing these business aspects – from the President, to the people in the business units, to the operators in the facilities who make day-to-day decisions that may affect the environment.

OPG's Sustainable Development Council, as the name suggests, provides advice to OPG's executive team regarding company-wide environmental, economic and social strategy and planning. The Council is chaired by Richard Dicerni, OPG's senior executive on the sustainable development file. Ron Osborne, President and CEO, and Graham Brown, Executive Vice President and Chief Operating Officer, are *ex-officio* members of the Council.

ISO 14001 Environmental Management System

OPG was among the first North American utilities to earn ISO 14001 certification of its Environmental Management System (EMS) throughout its major facilities and plant groups.

The ISO 14001 EMS system helps OPG to make certain that its environmental policies are managed, implemented, checked and reviewed within an overall context of continuous improvement. Within operations, the EMS is instrumental in assisting the business units to manage their environmental impacts.

In 2002, OPG passed its ISO 14001 recertification audits at all major stations.

At OPG we meet our obligation to produce power in a manner that reflects our commitment to environmental stewardship.

Key Environmental Performance Targets

Each year, OPG sets key targets for improving its environmental performance relative to the previous year. These efforts are reinforced by an Annual Incentive Plan linking management's compensation to meeting the targets.

In 2002, OPG's success in meeting targets established in the previous year was mixed (see Table 1). Specifically, success was realized in the areas of Regulatory Compliance, Air Emissions, Radiation Dose to Public, and Ash and Gypsum Diverted from Landfills. Less successful was performance regarding Moderate and Minor Spills, Energy Efficiency, and Low and Intermediate Level Radiation Waste. In all areas where targets were not met, OPG has established programs to improve performance.

Table 1 Corporate Environmental Performance Targets (2002-2003)
All targets are voluntary except where otherwise specified. Source: OPG

Category	2002 Target	Target Met	2003 Target
Spills	Major (A) = 0	Yes	Major (A) = 0
	Moderate (B) = 0	No[2]	Moderate (B) = 0
	Minor (C) ≤ 19	No[3]	Minor (C) ≤ 24
Regulatory Compliance	Major Infractions[4] = 0	Yes	Major Infractions[4] = 0
	Moderate Infractions[5] ≤ 197	Yes	Moderate Infractions[5] ≤ 124
Energy Efficiency	160.5 GWh saved	No[6]	190 GWh
Air Emissions	NO_x = 38 Gg net	Yes	NO_x = 35 Gg net
	SO_2 = 153.5 Gg net	Yes	SO_2 = 153.5 Gg net
	NO_x rate = 1.07 Gg/TWh-net	Yes	NO_x rate = 0.91 Gg/TWh-net
Radiation Dose to Public	Pickering ≤ 10.0 µSv	Yes	Pickering ≤ 9.5 µSv
	Darlington ≤ 7.5 µSv	Yes	Darlington ≤ 7.1 µSv
Low & Intermediate Level Radioactive Waste	≤ 4,560 m³	No[8]	≤ 5,300 m³
Ash & Gypsum diverted from landfill	≥ 785,000 tonnes	Yes[7]	≥ 700,000 tonnes

(1) OPG ranks the severity of spills according to guidelines set by the company's Spills Severity Rating Procedure, which mirrors provincial Ministry of the Environment guidelines
(2) One spill of Freon at Nanticoke
(3) Fossil and hydroelectric exceeded spill target by 9 spills
(4) Major infractions are defined as Director's Orders, charges and convictions
(5) Moderate Infractions include Municipal Industrial Strategy for Abatement and Certificate of Approval violations exceeding limits and administrative items such as missed samples, data logger failures
(6) Energy saved was 72.6 GWh
(7) Regulated target met with the use of Emission Reduction Credits
(8) Low and intermediate level waste produced was 4,817 m³. The high production, relative to the target, was due to extended outages and related maintenance activities at Darlington G.S. and Pickering G.S.

Regulatory Compliance

OPG's "licence to operate" is subject to compliance with requirements and conditions contained in statutes, regulations, bylaws, operating permits and Certificates of Approval (C of A's).

In 2002, OPG had no major infractions (Director's orders, charges or convictions), and had 15 per cent fewer moderate infractions (209 in 2001 vs. 178 in 2002). Thirty-eight of the moderate infractions involved effluent limit exceedances under provincial MISA (Municipal Industrial Strategy for Abatement) regulations or site-specific C of A's, compared with 13 exceedances in 2001 and 52 in 2000. OPG's effluents were tested for toxicity on 514 occasions, resulting in five failures to pass (vs. three failures in 2001, and 17 in 2000).

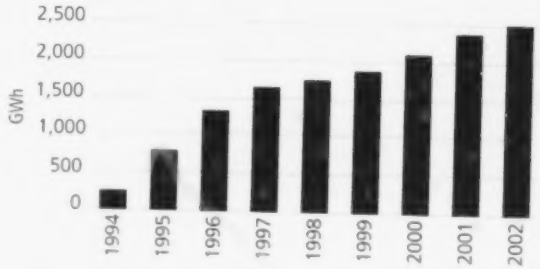
Most infractions were administrative in nature and had no direct impact on the environment; for example, late reporting, monitoring equipment failures, and improper labeling or lost samples. Still, reducing infractions continues to be a priority that OPG is addressing through awareness training, better procedures and preventive maintenance.

In 2003, our goal is to realize zero major infractions, and to reduce MISA and Certificate of Approval infractions by 30 per cent. Ultimately, our goal is to eliminate minor and moderate regulatory infractions altogether.

Energy Efficiency

OPG set a target of reducing its internal energy consumption by three per cent annually between 2000 and 2004. This target is considered a "best practice" for industrial users by the Alliance to Save Energy, a Washington-based coalition promoting leadership in responsible energy use. In 2002, OPG did not meet its energy efficiency target, with realized savings of 1.3 per cent. This result marks the first time OPG has missed an energy efficiency target since introducing its energy efficiency program in 1994 (see Figure 1).

Figure 1 Annualized Energy Savings from Implemented Projects, 1994-2002. Source: OPG



OPG's annualized energy savings increased by 2,443 GWh between 1994 and 2002, representing monetary savings of more than $105 million per year (@ 4.3 cents per kilowatt-hour) and annual emission savings of 2.3 million tonnes of CO_2, NOx and SO_2.

Through the application of Envision™ (OPG's energy efficiency software) large industrial customers can reduce their internal energy consumption (see page 32 for details). OPG also lends its support to education and awareness building regarding energy-saving initiatives:

- **Energy-efficient buildings:** To encourage energy efficiency in the building sector, OPG sponsored the Ontario Lung Association Healthy House Award in 2001 to recognize the environmental benefits of home energy savings. In 2002 OPG sponsored an R-2000 Excellence Award.

- **Education:** OPG is a major sponsor of the LivingWise program, which teaches schoolchildren and their families how to conserve energy and water, and includes an energy-saving technology kit. The program has been delivered to 3,500 Grade 5 students in Pickering and Darlington, and is currently being delivered to 1,700 students in the Nanticoke area.

- **Conservation:** OPG supports the delivery of Destination Conservation, a program designed to increase sustainability by helping schools conserve water, save energy and reduce wastes. This program is available to 25 schools in the Toronto Catholic District School Board.

- **On-line resources:** OPG is a major sponsor of the On-Line Energy Efficiency Centre, which offers state-of-the-art advice to help industry trim energy costs. The site is managed by the not-for-profit Canadian Energy Efficiency Alliance (www.energyefficiency.org).

- **Better Building Partnership:** OPG has worked with the Better Building Partnership to identify means to reduce energy consumption in Toronto-based buildings. OPG's head office has been recognized by the Partnership for its historical energy efficiency initiatives (e.g., energy efficient lighting, motion detectors on lighting).

OPG also promotes energy efficiency through its alliances with stakeholders such as Natural Resources Canada, American Council for an Energy Efficient Economy, and the Electric Power Research Institute.

Industry Associations

OPG is a member of many industry associations that advance sustainable development in such areas as environmental protection, biodiversity conservation, environmental research, climate change policy, and energy conservation:

- The World Business Council on Sustainable Development comprises more than 160 companies from 30 countries with the shared goal of solving sustainable development issues. Ron Osborne is a member of the Executive Committee of the WBCSD. In 2002, OPG with Eskom, a South African utility, completed a benchmarking study of 11 utilities world-wide, entitled "Sustainability and the Electric Utility Sector". This study was presented at the World Summit on Sustainable Development in Johannesburg.

- The e7 is composed of nine of the world's major electricity companies that are dedicated to the advancement of sustainable energy development. e7 supports the Sustainable Energy Development Scholarship Program, which is offered to graduate students from developing countries who are advancing knowledge in the area of sustainable energy development (see Appendix C for expanded discussion).

- The Canadian Electricity Association (CEA), of which OPG is a member, represents 26 Canadian electricity producers. It sponsors the industry's Environmental Commitment and Responsibility program. In 2002, the CEA worked with federal and provincial stakeholders on contributions the electricity sector can make to reduce the industry's greenhouse gas emissions, following Canada's ratification of the Kyoto Protocol. An agreement was also reached with federal and provincial governments to monitor mercury emissions at each of the major fossil generating facilities across Canada, as a predecessor to establishing a Canada Wide Standard for mercury emissions from fossil plants.

- The CANDU Owners Group, which represents owners of CANDU nuclear reactors (such as those in operation at Pickering and Darlington), focuses on health, safety and environmental research. In 2002, OPG supported this research with $2.8 million in funding.

- The Canadian Nuclear Association promotes the development of nuclear technology for peaceful purposes.

- The Canadian Wind Energy Association represents the wind energy community, comprising organizations and individuals who are directly involved in the development and application of wind energy technology, products and services, and which support the appropriate development and application of all aspects of wind energy.

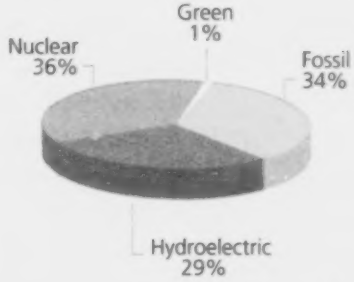
Air

In 2002, about two-thirds of OPG's electricity was produced by hydroelectric and nuclear stations that emit virtually no air emissions that cause acid rain, global warming and smog (see Figure 2). Six fossil-fueled stations produced the balance of OPG power. These stations use coal as their primary source of energy, with the exception that Lennox Generating Station uses approximately 70 per cent natural gas and 30 per cent oil. They have the advantage of being capable of quickly responding to peaks in consumer demand for electricity.

The major air emissions released from the combustion of coal include nitrogen oxides (NOx), sulphur dioxide (SO_2) and carbon dioxide (CO_2). Other contaminants are also released but in much smaller or trace quantities, among them mercury and fine particulates. These contaminants are of concern because of the potential risks they pose to human health. A partial list of airborne contaminants released from OPG operations can be found in Appendices A and B.

NOx and SO_2, collectively known as acid gas, are largely responsible for the formation of acid precipitation that damages aquatic ecosystems, plants and structural materials such as limestone buildings and monuments. These gases are also key components in the formation of ground-level ozone and smog. CO_2 is a greenhouse gas linked to climate change.

Figure 2 OPG's Generation Mix (2002)



Source: OPG

OPG continues to make significant progress in reducing air emissions from its fossil-fueled plants. In 2002, total fossil emissions of acid gas amounted to 189,500 tonnes. Comparisons of acid gas emissions since 1998 show a favourable reduction of 9,300 tonnes, or about five per cent, and a decrease in the acid gas emission rate of about 17 per cent, with a corresponding increase in the product output from the fossil plants of about 5.4 GWh, or 16 per cent. The 1998 reference was chosen to illustrate the improvement in fossil emission profiles since the onset of OPG's major nuclear recovery program.

In 2001, the Province enacted a new emissions trading regulation (Ontario Regulation 397/01) that came into effect in 2002. The regulation requires improved performance for

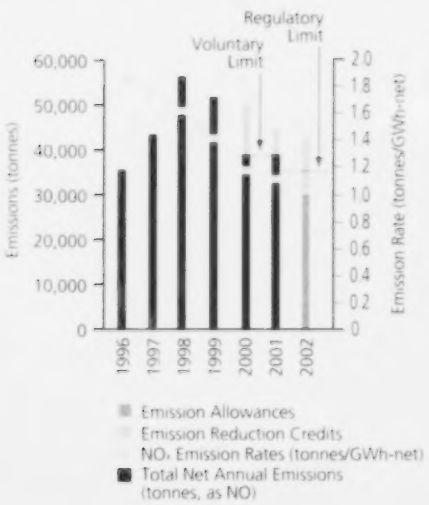
SO_2 and NOx emissions from OPG's fossil plants, and calls for the implementation of an emissions trading system for the electricity sector. The fossil plants possess sufficient emission allowances, and emission reduction credits, to meet this regulation.

Nitrogen Oxides (NOx)

In 2002, OPG fossil stations produced 1.5 per cent less electricity than in 2001, and NOx emissions decreased by about five per cent, to 42,300 tonnes (see Figure 3). The resulting emission rate was 1.07 kg of NOx emissions per MW of fossil electricity production, or 1.07 kg/MWh compared to 1.10 kg/MWh in 2001 and 1.63 kg/MWh in 1998. This rate will continue to decline as OPG installs new NOx reduction technologies.

OPG is required under the new emissions trading regulation to surrender, to the Ontario Ministry of the Environment, NOx emission allowances and emission reduction credits to match its 42,300 tonnes of NOx emissions.

Figure 3 NOx Emissions and NOx Emission Rate for OPG Fossil Generation (1996-2002)



Under the new Ontario Air Regulations, Ontario businesses in the electricity sector are allowed to use emission reduction credits created by U.S. emitters from New York, Pennsylvania, New Jersey, Delaware, District of Columbia, Maryland, West Virginia, Kentucky, Ohio, Michigan, Indiana, Illinois and Wisconsin. This gives Ontario the opportunity to encourage emission reductions below regulatory requirements from sources not within Ontario's jurisdiction, but that do affect our airshed. Since about 50 per cent of Ontario's acid rain and smog-causing pollutants are transported in by prevailing winds from the United States, Ontario's emissions reduction trading system has the potential to significantly improve air quality in the province. OPG did not buy any NOx credits in 2002.

The new regulation also allows for "Credits for Early Action" (CEA's) to be assigned to pro-active industries for reducing their emission profiles on a voluntary basis, and ahead of regulatory requirements. Accordingly, OPG has applied and received credit for its gas conversion activities at Lennox G.S. in the late 1990s, together with its installation of low-NOx burners at Nanticoke G.S. and Lambton G.S.

OPG's NOx emission rates have steadily declined since 1999 (see Appendix B), due to our investments in technologies that optimize the conditions under which fuel is burned. These include continuous emission monitors, smart computer controls, low-NOx burners and the conversion of oil-burning units to also burn natural gas.

In 2002, OPG continued to install state-of-the-art Selective Catalytic Reduction(SCR) technology on two units at Lambton and two units at Nanticoke. This quarter-billion-dollar investment will further reduce the NOx emissions from these units by 80 per cent or up to 12,000 tonnes annually by the end of 2003 – the equivalent of taking 600,000 vehicles off the road. The first unit at Lambton has been in operation since the end of 2002. The other three are planned to be operational by the end of 2003.

With the introduction of lower sulphur Powder River Basin coal at Nanticoke G.S., the plant operators are continuously testing and seeking emission improvements associated with the combustion process. In 2002, Nanticoke Unit 5 was retrofitted with its third generation of state-of-the-art low-NOx burners, over fire air to reduce NOx in the boiler, plus additional combustion improvements that resulted in a 30 per cent reduction in the unit NOx emission rate. The implementation of these types of emission control technologies provides OPG with technology options to meet tighter emission standards for fossil plants.

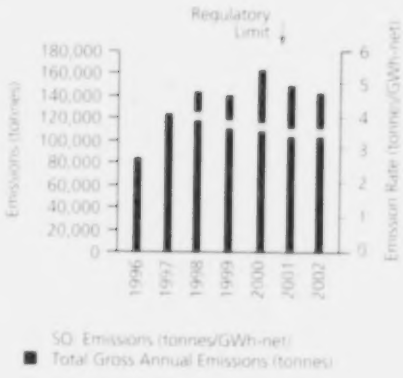
Sulphur Dioxide (SO_2)

In 2002, OPG fossil stations emitted 147,200 tonnes of SO_2, lower than the recent five year rolling average of about 149,000 tonnes (see Figure 4). The resulting emission rate was 3.72 kg of SO_2 emissions per MW of fossil electricity production, or 3.72 kg/MWh compared to 3.69 kg/MWh in 2001 and 4.18 kg/MWh in 1998. Emission rates have begun to stabilize over the past few years. OPG has typically been pro-active in implementing low sulphur fuel programs, fuel switching, and scrubber technology ahead of regulatory requirements to manage its SO_2 emissions. Under the new emissions trading regulation, in 2002 OPG surrendered, to the Ontario Ministry of the Environment, SO_2 emission allowances and emission reduction credits to equal its 147,200 tonnes of SO_2 emissions.

Figure 4

SO_2 Emissions and SO_2 Emission Rate for OPG Fossil Generation (1996-2002)

Source: OPG



Greenhouse Gases (GHG)

In 2002, Canada ratified the Kyoto Protocol. All Canadians and Canadian industry face a carbon-constrained future. OPG is well positioned for this world with its low carbon intensity generation portfolio. In addition, OPG has been managing its greenhouse gas (GHG) emissions since 1995 when its predecessor company Ontario Hydro, set its first target to stabilize net emissions at 1990 levels by 2000.

OPG's current voluntary target is to stabilize net greenhouse gas emissions at levels equivalent to the 1990 baseline. In 2003, the focus of OPG's greenhouse gas strategy will change as the company begins discussions with the Federal and Provincial governments to define its GHG emission reduction targets for the first Kyoto commitment period (2008 to 2012).

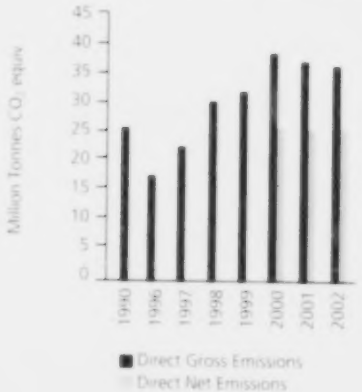
OPG's current strategy for managing GHG emissions is based on avoiding and reducing these emissions through our operations and removing CO_2 from the atmosphere. To meet our target we will use nuclear energy, energy efficiency improvements, emissions trading, green power and carbon sequestration.

The primary GHG resulting from OPG's operations is CO_2, and in 2002 total gross CO_2 emissions were 36.7 million tonnes, 10.7 million tonnes above the stabilization target of 26 million tonnes (see Figure 5). As of September 2002, OPG has contracted for 17.1 million tonnes of CO_2 emission reduction credits. In 2002, OPG's operations and initiatives to manage greenhouse gas emissions avoided or reduced CO_2 emissions by over 76 million tonnes.

To improve the efficiencies of reporting and to provide a more comprehensive view of our GHG initiatives, this year's submission by OPG to Canada's Voluntary Challenge Registry is presented in Appendix C.

Figure 5

Gross and net greenhouse gas emissions for facilities owned and operated by OPG in 2002.



Mercury Emissions

Mercury emissions are an environmental and health issue. Initiatives are underway in both Canada and the United States to assess and establish regulations for mercury emissions from the electricity generating sector. There is considerable uncertainty about the specific standards that will be established.

OPG supports the development of standards for mercury emissions, and will continue to be actively involved in research and funding to develop mercury emission measurements, track the fate of mercury in the environment and develop mercury control technologies.

To improve the accuracy of the inventory of mercury emissions from fossil stations, OPG and other Canadian utilities are in the process of implementing a comprehensive mercury monitoring and reporting program. This two-year program will be implemented across all utilities in Canada and will provide more accurate data for the development of the Mercury Canada Wide Standard for the electric power generating sector. Initial work began in 2002 to establish sampling, analysis and reporting protocols and to identify qualified laboratories that could analyze mercury in coal and ash samples. The program will be fully implemented within OPG in early 2003.

OPG continues to work in partnership in the development of a proven, commercially available mercury control technology. Co-funding of research with the U.S. Department of Energy, other U.S. utilities and the Canada Centre for Mineral and Energy Technology (CANMET) continued in 2002. More specifically:

- OPG's Joint Programs with the U.S. Department of Energy/ADA Technologies: Short-term, full-scale tests of activated carbon injection have been successfully completed at sites in the U.S. using various fuels and equipment under a range of operating conditions. The demonstrations showed that considerable mercury capture could be achieved, in the 70 to 90 per cent range, depending on fuel type and conditions. Much of the information is readily applicable to OPG stations. OPG will participate in the U.S. DOE's long-term baghouse/carbon injection test, at Southern Company's Gaston plant, scheduled for 2003/4.

- OPG's Joint Programs with Electric Power Research Institute: These programs include the EPRI/EERC (Energy & Environmental Research Center - University of North Dakota) short-term, full-scale tests of the influence of Selective Catalytic Reduction/Selective Non-Catalytic Reduction/Ammonia Flue Gas Conditioning on mercury speciation and capture. These have been completed at seven sites, including the effect of ammonia Flue Gas Conditioning at OPG's Nanticoke generating station. A second project at Nanticoke involved a slip stream test to determine the effect of carbon injection for Powder River Basin fuel. The results were considered useful for correlating with other small- and full-scale tests.

- OPG's CANMET Pilot Combustion Centre: With support from OPG, the centre has been assessing various combinations of equipment, sorbents and fuels to enhance mercury oxidation and additive capture. This program began in 2001 and continued through 2002.

- OPG's "Partner Program" with Powerspan: OPG supports Powerspan, which is an organization that develops and markets innovative technologies, including those related to the fossil-fueled industry, that improve ways energy is produced and used in the U.S. The program benefits OPG by providing a window on innovative technology and as an information source.

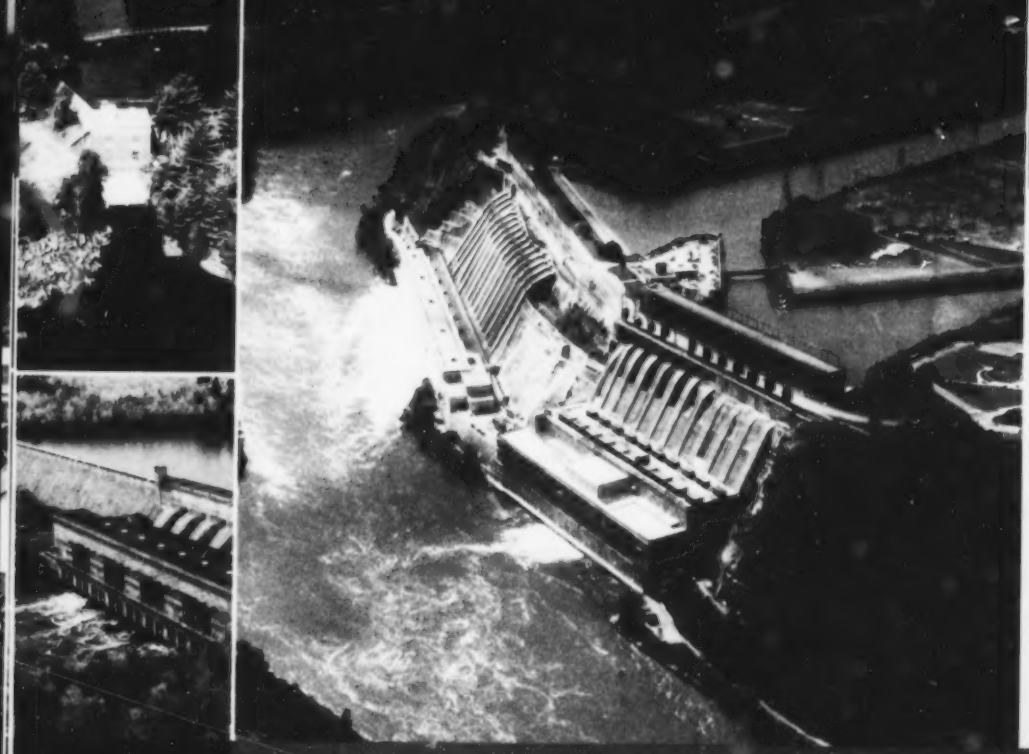
Other Contaminants

Appendix B includes OPG's National Pollutant Release Inventory (NPRI) emissions to air, water and land for 2002. Based on this data, compiled by Environment Canada, no OPG plant is ranked among the 100 facilities in Ontario which release the largest amounts of known carcinogens to air or water.

Radiation Exposure to the Public

Very low levels of radioactivity are released as a result of the operation and maintenance of our nuclear reactors. The levels are minimized by the design of the plants themselves, which include multiple passive barriers including a one-kilometre exclusion zone separating the public from the reactor building. Active barriers such as air dryers are used to remove tritium from the air, and filters are used to capture particulate matter and iodine. Operating procedures are also in place to protect the health of employees and the public.

Dose to Public information for each facility is provided in Appendix A. The "2002 Actual" figure is an estimate of the radiation dose people would receive if they lived just outside the station boundary 24 hours a day, drank local water and milk, and ate local fish and produce. The dose is measured in microsieverts (μSv), an international unit of dose. By way of comparison, the average Canadian receives about 2,000 μSv a year from natural sources such as cosmic rays and radon in the soil. In 2000, new technology was introduced at the Pickering nuclear site boundary to more accurately measure the noble gas component of public dose values. More accurate measures show that actual emissions are lower than previously reported. The radiation levels reported by both the Darlington and Pickering generating stations in 2002 were 1.2 μSv and 4.8 μSv, well below the limit of 1,000 μSv set by government.



Water

Water is a large-scale, largely emissions-free, renewable source of hydroelectric power and OPG's lowest-cost source of electricity. Water is also necessary for cooling and source water purposes at nuclear and fossil-fueled generating stations.

Recognizing that water is irreplaceable in sustaining life, OPG applies high standards in managing its water resources.

Water Use in Hydroelectric Generation

In 2002, OPG generated 34,300 GWh of renewable hydroelectric power, an increase of three per cent relative to 2001. The improvement was due to the greater availability of water, and represents a return to near-average annual levels of hydroelectric production.

OPG continues to assess opportunities to produce hydroelectric power more efficiently, and to develop additional hydroelectric generation capacity. Over the period 2003-2007, OPG will spend approximately $300 million on hydroelectric facility upgrades and energy efficiency enhancement. Also, in 2002, the Province of Ontario announced plans to accelerate the development of a second tunnel at the Sir Adam Beck complex to increase the supply of water for power generation.

Water Use in Fossil and Nuclear Generation

Almost 100 per cent of the water used by OPG's fossil and nuclear stations is used for cooling purposes. The water passes through the station only once and is returned to its source at a slightly higher temperature. Water use is governed by the Ontario Ministry of the Environment's Permits to Take Water.

In 2002, OPG's fossil and nuclear plants used approximately 13,900 million cubic metres of cooling water.

Water Management Planning

In 2001, the Ministry of Natural Resources (MNR) introduced Water Management Planning to Ontario. This planning is a consultative process that coordinates the MNR, OPG and local stakeholders to explore sustainable solutions for water resources management. In 2002, considerable progress was made in developing water management plans for provincially regulated river systems. Inter-provincial and international river systems are governed by other agreements and treaties. As part of the process, Steering, Planning and Public Advisory Committees were established to develop plans for river systems connected to OPG's Northwest and Northeast plant groups. OPG fully supports Water Management Planning, and has incorporated this process into its long-term business plans. The process provides guidelines that will assist OPG in balancing each region's unique social, cultural and

recreational interests with OPG's business mandate to generate safe, reliable and economically competitive electricity.

Water Management Priorities

OPG offsets the impact of its hydroelectric operations on water resources. For example, we protect fish spawning habitats from disruptions in water levels by adjusting the timing and volume of discharges from hydroelectric facilities. At the same time, discharge adjustments may benefit other aspects of the water system; for example, they may prevent flooding of shoreline residences or reduce erosion on riverbanks during spring runoff. OPG welcomes the clarity that Ontario's Water Management Planning process brings to decision-making and the prioritizing of sustainable development issues.

Aquatic Research

OPG continually improves the methods and technologies it uses to generate electricity. To support this goal, we fund various environmental research projects, including an Industrial Research Chair in Watershed Biogeochemistry at Trent University in Peterborough, Ontario, to study the effects of acid rain and the influence of climate stress on watersheds.

For the past seven years, OPG has supported a Natural Sciences and Engineering Research Council (NSERC) Chair in Ecotoxicology at the St. Lawrence River Institute of Environmental Sciences. The institute is studying various water-related issues, including: the effects of water level variation on ecosystem dynamics; the sources, transport and fate of pollutants and pathogens in rivers; and innovative and effective community-based programs to restore the benefits of a healthy river ecosystem. Through its River Restoration Council, the Institute is implementing a remedial action plan in the Cornwall-Massena area, creating artificial fish spawning habitats in the St. Lawrence River and researching the diversity of area wetlands. It is also working with OPG's R.H. Saunders Generating Station to monitor zebra mussel population densities in the river.

OPG co-sponsors an NSERC Research Chair at the University of Guelph designated Metals In The Environment (MITE). MITE examines the sources of metals entering the environment, the processes by which they are transformed once in the environment and their ecosystem impact. These three research domains will be merged to develop an Ecological Risk Assessment process.

Chemical Use Reduction/Optimization

OPG uses chemicals in the treatment of process water at its nuclear generating stations. These chemicals may be discharged to surrounding waters during the normal course of plant operations. In response, programs have been implemented at Darlington and Pickering to closely monitor and control the amounts of chemicals used. For example, Pickering has reduced the concentration of hydrazine used to treat boiler water by approximately 50 per cent between 2000-2002.

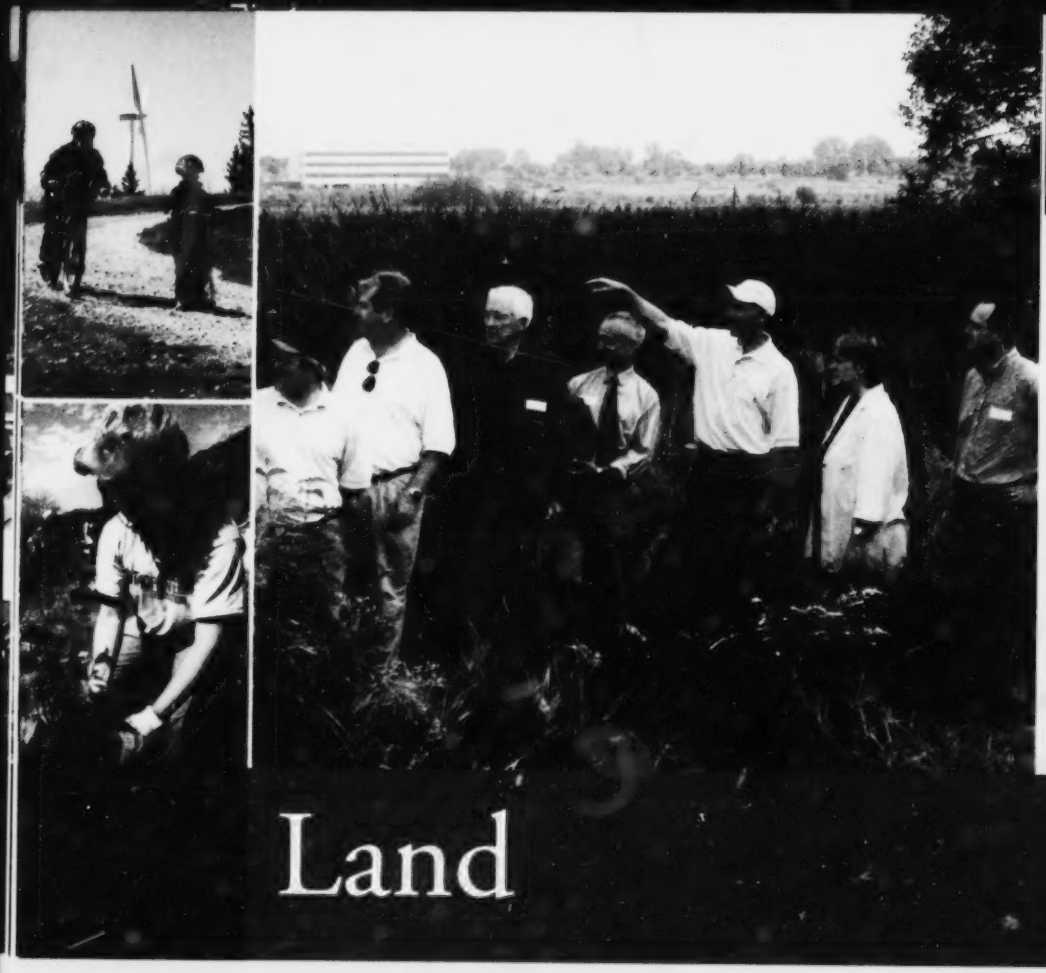
Zebra Mussel Control

In 1990, Ontario Hydro initiated a research program to examine alternative ways to reduce or replace chlorine to control zebra mussels at fossil and nuclear generating stations. Over 20 different technologies have been investigated since 1990.

To date, approximately $22 million has been invested on the installation of effluent dechlorination systems and upgrades at the Nanticoke, Lambton and Lakeview fossil stations, and the successful installation of an ozonation system at Lennox G.S. that eliminated the need for chlorine applications. At Saunders G.S. chlorine is applied only when the zebra mussel is at its most vulnerable stage of life. This refinement in application resulted from an improved understanding of the biology of the mollusc dechlorinization systems at the Pickering and Darlington generating stations.

For the third year in a row, OPG has received the Outstanding Stewardship of America's Rivers Award from the Washington-based National Hydropower Association for its contribution to the Madawaska River Water Management Review. The most recent award recognizes OPG's work in implementing and monitoring the river's Water Management Plan, in partnership with the Ministry of Natural Resources, Pembroke District and a representative Standing Advisory Committee.

"All stakeholders won and continue to win from the Madawaska River Water Management Review and Planning Process. This process is being used as a model, so that others in society can learn and benefit. This model is a positive step forward for humankind in the way we harmonize with nature and each other, and deserves the recognition and distinction of receiving this award." **(Steve Roy, member of the Public Advisory Committee, the Standing Advisory Committee and a long-time resident of the Madawaska River Valley.)**



Land

Biodiversity Policy In Action

OPG's Biodiversity Policy is the driving force behind our biodiversity management efforts. "Biodiversity" represents the full diversity of life, including genetic, species, and habitat diversity. At OPG, our long-term challenge is to ensure that we do not unduly cause or contribute to the decline of species, or the habitats upon which they depend.

Our policy is responsive to the Convention on Biological Diversity, the Canadian Biodiversity Strategy (Environment Canada 1995), Canada's *Species at Risk Act* and the *Ontario Endangered Species Act*. OPG has received acclaim for the Biodiversity Policy by several external groups including Canada's Federal Biodiversity Convention Office, the World Business Council for Sustainable Development, the Electric Power Research Institute and the Wildlife Habitat Council.

Habitat loss and fragmentation, particularly in southern Ontario, has caused the decline of many species. To help remedy this situation, OPG has engaged in habitat protection and restoration activities both on- and off-site.

On OPG's facilities and landholdings, we have restored habitats for species that may be declining regionally, thereby preventing other species from becoming "at risk". This action is consistent with the stewardship efforts under the federal *Species at Risk Act*, with specific initiatives that include:

- management of waterflow and habitat for fish spawning, migration and fish passage issues, with notable emphasis on Sturgeon, American Eel and Brook Trout.
- restoration for woodland and wetland habitat for wildlife which are at risk in the highly fragmented regions of southern Ontario.
- restoration of Tall Grass Prairie, which was once native to southern Ontario, is now an endangered ecosystem. Lambton G.S. is engaged in a multi-year program to reintroduce Tall Grass Prairie to the area.
- a partnership arrangement with Ducks Unlimited and Lennox G.S. to manage the important Lennox G.S. wetland complex that supports one of the largest Black Tern colonies on the Great Lakes.

OPG has entered into partnerships with external conservation organizations at some of our sites. These partnership efforts help to ensure that community interests are recognized and addressed. They have the added advantage of building trust and a positive company brand.

Environmental Performance

One of OPG's more notable partnerships is with the U.S.-based Wildlife Habitat Council (WHC). The WHC is a non-profit, non-lobbying group of corporations, conservation organizations and individuals dedicated to assisting corporate landowners in the development of programs that protect, conserve and enhance wildlife habitat and biodiversity and foster environmental values. The WHC was established in 1988 with a mission to work with industry to make better use of their land holdings for wildlife and biodiversity needs. They act as an independent advisor and certifier of programs and work to build the company's image while contributing to wildlife habitat rehabilitation. WHC members include more than 100 corporations and two dozen conservation organizations.

OPG has submitted several of its site habitat management plans to the WHC for independent third party professional review and accreditation. Four of our sites (Lambton, Nanticoke, Darlington and Pickering) have been certified by the WHC and two sites (Darlington and Pickering) have won international awards for their habitat management plans and associated community involvement and education programs. To maintain certification, OPG must pass external audits from the WHC on a biennial basis to ensure plans are being effectively implemented and remain current. This action is in addition to annual reporting, monitoring and audits required to maintain our ISO 14001 registered environmental management systems.

Carbon Sequestration

OPG's award-winning carbon sequestration program has actively engaged partners in meaningful habitat restoration activities across southern Ontario. Announced in the

Biodiversity Policy Related Initiatives 2002

- Madawaska River water level impacts on waterfowl - A study was conducted to determine the potential impacts of water level management along the Madawaska River system on nesting waterfowl. The study involved a site reconnaissance of selected wetlands, a review of hydrological data, and a literature review. The results suggest that regulation of water elevations and flow rates may be affecting nesting success in downstream wetlands. Future actions will be determined.

- DeCew G.S. follow-up study of Lower Twelve Mile Creek - As a follow-up to the natural areas survey and conservation initiative of 2001, a supplemental study was conducted along Lower Twelve Mile Creek. This work identified two nationally and provincially rare plant species, pin oak, and a species of hawthorne that is also ranked as globally uncommon.

- Black Tern/Heron Interaction Study at Lennox G.S. - The 56 hectare wetland at Lennox G.S. is an important nesting site for the Black Tern. In 2002, an assessment was done to determine if the recent colony of Great Blue Herons was having a predation impact on Black Terns. Also in 2002, a drawdown of the wetland was conducted to promote vegetation growth and improve habitat for terns and waterfowl.

- Wesleyville hosts hack-release of orphaned Peregrine Falcons - Three peregrine chicks, rescued from a construction site in Quebec, were raised for two weeks in a special hack box on the roof of the powerhouse until they were ready to fly. Released in early September, all three eventually dispersed. According to the Canadian Peregrine Foundation, this is the first known hack-release of wild peregrines conducted in Canada.

- Darlington and Pickering annual Boy Scout tree planting - Boy Scouts again helped the Darlington and Pickering sites with tree planting, an annual event. This year, a total of 800 trees were planted.

Environmental Performance - Land

spring of 2000, the program's goal is to plant at least two million native trees and shrubs by the fall of 2007, resulting in the addition of at least 900 hectares of new forest.

The program is focused on restoring forest habitat in southern Ontario, which has lost over 80 per cent of its original forest cover. The Carolinian forest of southwestern Ontario is considered the most ecologically imperiled region in Canada and supports 71 nationally endangered or threatened species, 50 species and 37 vegetation types considered globally rare, over 500 provincially rare plant and animal species and over 65 provincially rare vegetation community types. Plantings are targeted to expand key forested areas and connect woodland patches to help promote the recovery of declining wildlife that are especially at risk because of the loss and fragmentation of habitat. Management plans have been developed for each planting site with explicit objectives linked to regional biodiversity conservation priorities. These sites will be managed and monitored to ensure conservation objectives are attained.

In just over two years, through its tree planting partnerships, OPG has planted over one million native trees and shrubs, matched to site conditions, on more than 450 hectares of land, addressing a variety of ecological restoration priorities (see map).

This reforestation program is an important contributor to OPG's Greenhouse Gas Management Strategy. OPG estimates that the total tree planting will trap and offset about one million tonnes of carbon dioxide over the lifetime of the trees, helping to reduce global warming. The program is unique in linking a GHG emissions issue to a biodiversity solution by working with nature to help sequester CO_2 emissions. Many of these same plantings, notably along riparian systems, also provide other important ecosystem services by reducing erosion, enhancing stream water quality and aesthetics.

OPG's Carbon Sequestration/Biodiversity Management Program has been well received by the environmental community and has been recognized with external awards for three consecutive years. In 2002, this program achieved national recognition through Wildlife Habitat Canada's Forest Stewardship Recognition Program.

Big Picture 2002 - A Natural Heritage System for southern Ontario - This big-picture assessment of habitat conservation needs was used to identify priority forest habitat restoration sites for OPG's carbon sequestration and biodiversity management program. It ensures that tree planting efforts are directed to strategically located sites, notably habitat cores (dark green) and interconnecting corridors (light green), where it is most urgently needed to help conserve biodiversity.

Environmental Outreach

Our environmental outreach initiatives provide philanthropic outreach to various not-for-profit organizations engaged in biodiversity conservation and stewardship programs across Ontario. Environmental initiatives supported include:

- World Wildlife Fund Canada's ecotoxicology program and its current Conservation Science and Solutions Fund, which supports the identification, protection and restoration of priority sites for biodiversity conservation within Ontario.

- Canadian Nature Federation's Important Bird Areas (Niagara River), which is part of an international program to identify and manage areas of exceptional importance to the conservation of birds. The Niagara River, the site of our largest hydroelectric station complex, is an internationally recognized bird area.

- MacIver's Owl Rehabilitation Centre, which is highly recognized for its success in rehabilitating injured owls and hawks.

- Canadian Peregrine Foundation, which is aiding in the recovery of the endangered Peregrine Falcon. Peregrine Falcons have recently started to nest at OPG's Lakeview plant in Mississauga and have been successfully reared and released from our Wesleyville site on Lake Ontario.

- Ducks Unlimited's wetland habitat restoration initiative for Pigeon Marsh, located along the northeast shoreline of Lake St. Clair and Second Marsh, on the shores of Lake Ontario, near Oshawa. Pigeon Marsh is part of one of the most important wetland complexes on the Great Lakes.

Helping a Prehistoric Fish

Lake sturgeon have survived very well in Ontario since the days of the dinosaurs, but today their existence is threatened. In response, OPG is lending its support to stakeholders who hope to restore this prehistoric fish in the Upper Mattagami River. Logging operations killed off lake sturgeon in Upper Mattagami at the end of the 19th century.

OPG and stakeholders reintroduced 50 adult lake sturgeon into the Upper Mattagami during the summer of 2002. The fish were moved 375 kilometres upriver from the headpond of the Little Long generating station. Some fish were implanted with radio transmitters to monitor their movements and provide information about their spawning ground. In the future, the stakeholders will assess the need for rehabilitation of the spawning grounds.

Environmental Performance - Land

Divert By-Products From Landfill

Consistent with OPG's long-term conservation efforts, we continue to develop commercial markets for our major by-products of fossil fuel combustion: coal fly ash, coal bottom ash and gypsum. Fly ash is used in manufacturing cement and concrete, and in controlled low strength material and fill applications. Bottom ash is used as granular fill in roadbeds and gypsum is used for the manufacture of wallboard. Coal fly ash is also used in engineered landfills. We are exploring the potential for coal fly ash to be used as filler in paint and plastics, and as a soil conditioner.

In 2002, we utilized 52 per cent of these by-products, or 807,560 tonnes, that would otherwise have been sent to landfills. This represents a steady increase in tonnes of by-product utilization over the last several years. The per cent utilization has increased from 42 per cent in 2000.

Manage Low- and Intermediate-Level Radioactive Waste

OPG's Darlington and Pickering nuclear stations continue to reduce their low- and intermediate-level radioactive wastes through careful waste separation. These facilities produced 4,817 m^3 of low- and intermediate-level radioactive wastes in 2002, compared to 5,299 m^3 in 2001. These radioactive wastes are transported to a waste management facility, where they are reduced and stored pending long-term management.

Manage Used Nuclear Fuel

Safety is OPG's number one priority in managing used fuel. The Canadian nuclear industry as a whole is internationally recognized for its high safety standards and performance. Wet and dry storage are both vital components of OPG's nuclear waste management program. Both are proven, safe methods of storing used nuclear fuel. When used fuel bundles are removed from a nuclear reactor, they are taken immediately to on-site, water-filled pools to cool and shield them until their radioactivity declines. After about 10 years in water storage, the used fuel can be transferred safely to large steel-and-concrete containers that are approved for storage by the Canadian Nuclear Safety Commission. OPG produces a small volume of used fuel relative to the quantity of nuclear energy it generates. The used fuel produced each year at Darlington and Pickering A and B facilities would fit into a room measuring 6 x 6 x 5 metres. OPG

OPG Partners to Plant Two Million Trees

- City of Toronto
- Long Point World Biosphere Reserve and Long Point Region Conservation Authority (CA)
- Niagara Escarpment World Biosphere Reserve and HamiltonRegion CA
- Essex Field Naturalists Club
- Trees Unlimited and Niagara Peninsula Conservation Authority
- Rural Lambton Stewardship Council and St. Clair Region CA*
- Eastern Ontario Model Forest
- Toronto and Region CA
- Essex Region CA
- Credit Valley CA
- Kettle Creek CA
- Catfish Creek CA*
- Ausable Bayfield CA*
- Grand River CA*
- Conservation Halton

* new partners in 2002

is conducting environmental assessments in preparation for the establishment of a dry storage facility at Darlington and an expansion of the Pickering facility. Public consultations are an important part of this process.

In 2002, the major owners of nuclear fuel waste in Canada, including OPG, formed the Nuclear Waste Management Organization (NWMO). The creation of the NWMO was required under the federal *Nuclear Fuel Waste Act* which was proclaimed in force in November 2002. The NWMO was created to recommend a long-term approach for managing used nuclear fuel produced by Canada's nuclear electricity generators. It will be engaging stakeholders, experts and interested Canadians to develop a solution that safeguards the public in a way that is sustainable, ethically and socially acceptable, and respectful of the environment now and in the future. The NWMO has a mandate to study approaches for the long-term management of nuclear waste, conduct multi-stakeholder consultations, and make storage recommendations to the federal government within three years. The NWMO would then be required to implement the approach selected by the federal government. OPG currently chairs the Board of Directors of the NWMO and provides significant financial support for its operations.

OPG also submits payments to a trust fund for the long-term management of nuclear fuel waste. Nuclear fixed asset removal and nuclear waste management funding, through contributions and income earned on investments, was $391 million in 2002 compared to $427 million in 2001. OPG reduced its contributions in 2002 primarily to adjust for over-contributions in previous years. The balance in the fund at December 31, 2002 was $1,599 million, compared to $1,208 million at December 31, 2001.

Land Assessment and Remediation

In response to a Director's Order from the Ontario Ministry of the Environment, OPG introduced a program in 1997 to assess and remediate historical contamination on properties occupied by its generating facilities. Accordingly, OPG ranked the sites as high, medium and low in reference to the need for remediation. OPG's first Site Assessment Plan, filed with the Ministry in 1998 and each year thereafter, identified 50 priority sites with known or potential contamination. The contaminants of concern were fuel oil, transformer oil, waste lubricants and tritium. OPG has completed nearly all of the site assessments required by the Director's Order, reducing the number of remaining priority sites to two in 2002. Assessment of the two remaining sites, and most of the required remediation, will be completed in 2003.

As of 2002, remediation of 10 priority sites was complete. In addition, remediation of priority sites began at two fossil locations (Hearn and Lakeview), three hydroelectric facilities (Sir Adam Beck 1, 2 and Pump Generating Station) and remained ongoing at one nuclear site (Pickering) and one hydroelectric facility (Chats Falls).

Remediation of medium priority sites was completed at seven fossil sites and one nuclear site, remains ongoing at one hydroelectric site, and was initiated at three fossil, one hydroelectric and three nuclear sites. Remediation of medium- and low-priority sites, which are defined as those that represent minimal concern based on the source and distribution path of contaminants, will be complete in 2007. All assessment and remediation work was reviewed by a third party group and approved by the Ministry of the Environment.

Elimination of PCBs

OPG is on course to eliminate 81 per cent of in-storage PCB waste and in-service high-level PCBs by year-end 2005, and the remainder of in-service high-level PCBs by year-end 2015. OPG, and its predecessor company Ontario Hydro, have reduced the inventory of in-service PCBs and PCB waste by approximately 65 per cent since 1994. In 2002, OPG shipped approximately 121 tonnes of PCB waste for destruction.

As of December 31, 2002, OPG's PCB waste inventory was 1,439 tonnes, as compared to 4,123 tonnes in 1994.

External Stakeholder and Employee Relations

INTERNAL PROGRAMS AND INITIATIVES

Safety Performance

Notwithstanding management's commitment to safety, OPG experienced an employee fatality in 2002. Additionally, an incident near OPG's Barrett Chute facility resulted in the death of two members of the public. As such, OPG senior management has taken deliberate steps to further enhance our focus on safety.

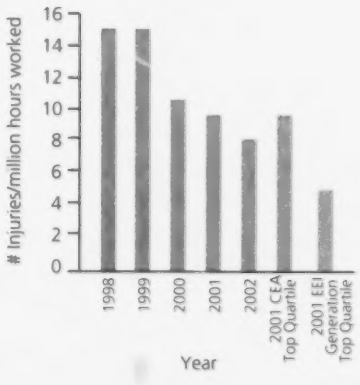
Regarding public safety, initiatives were undertaken to improve site security and public safety at all generating stations. An assessment of the public safety control measures in place at all hydroelectric generating stations and control dams was conducted. The scope of the assessment was subsequently increased to include the cooling water intakes and outfalls at OPG's nuclear and fossil generating stations. Expenditures of approximately $10 million will be made to implement the recommended improved control measures.

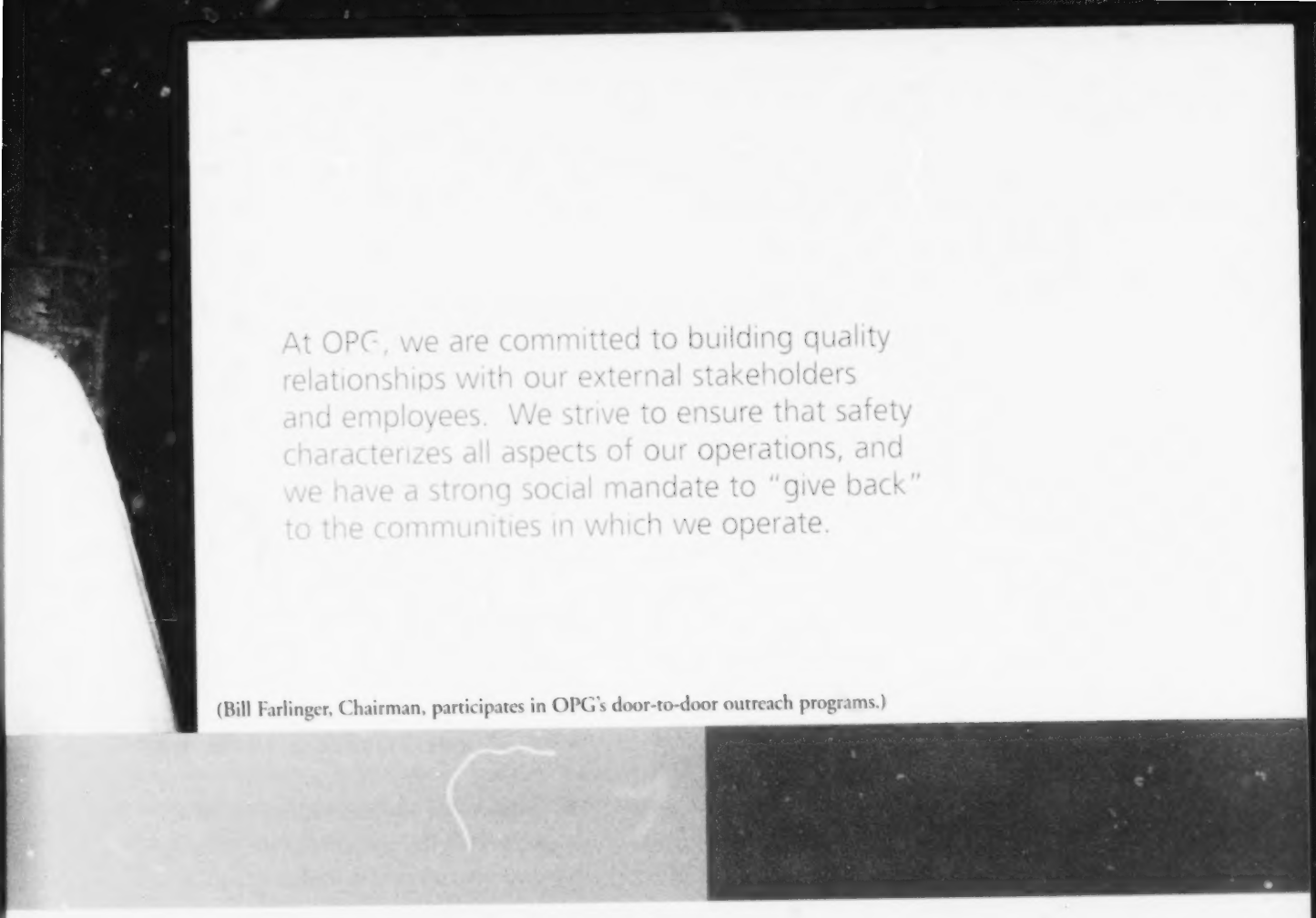
As well, numerous additional initiatives are underway to increase public awareness and education with respect to public safety around OPG's facilities.

Regarding employee safety, OPG has made significant progress in the last five years toward its goal of achieving top-quartile performance in its Accident Severity Rate and All Injury Rate (see Figure 6) compared to other similar North American generators. In fact, in 2002, OPG received a Silver Award of Excellence from the Canadian Electricity Association (CEA) for its top quartile safety performance in 2001. In 2002, as a result of the employee fatality at the Nanticoke facility, and a number of long-term work-related absences, OPG did not meet its Accident Severity Rate safety target. However, it did meet its All Injury Rate safety target and achieved top quartile in this measure compared to CEA similar utilities.

To further enhance public and contractor safety, the OPG Health and Safety Policy was revised to provide additional requirements in these areas. The new policy is published on-line at:
http://www.opg.com/info/employeesafety.asp

Figure 6 All Injury Rate





At OPG, we are committed to building quality relationships with our external stakeholders and employees. We strive to ensure that safety characterizes all aspects of our operations, and we have a strong social mandate to "give back" to the communities in which we operate.

(Bill Farlinger, Chairman, participates in OPG's door-to-door outreach programs.)

Initiatives aimed at reducing high-risk issues (including coal handling and contractor safety assessments) were launched in 2002. Hazards continued to be identified throughout the organization and operational controls were implemented to mitigate these risks in accordance with the *Occupational Health and Safety Act* (Ontario) and industry best practices. Going forward, OPG will be intensifying these efforts.

OPG's conventional safety management system is being enhanced to conform with the British Standards Institute's Occupational Heath and Safety Assessment Series 18001 (OHSAS 18001), which is consistent with the ISO 14001 standard adopted for OPG's environmental management system. Standards and procedures are being updated throughout OPG in accordance with this model. Several hydroelectric facilities have already received recommendations for registration according to the OHSAS 18001 specification document.

Company-wide, OPG includes safety measures and targets in our business plans and Annual Incentive Plan, and site-specific safety expectations in the GoalSharing Scorecards for all unionized employees. The Health and Safety Advisory Committee and local Joint Health and Safety Committees are valuable forums where all workplace parties can work together to improve safety.

Promoting Employee Wellness

Short-term absences and days lost per employee continued to decline at OPG: between 2000-2002, total sick leave use per OPG employee declined by nine per cent, which contributes to productivity across operations.

OPG provides a variety of wellness opportunities for employees:

- Improving individual health and well-being through lunch-and-learn sessions and Web-based programs.
- Lifestyle support tools such as developing healthy sleep patterns, exercise programs and nutrition kits for shift workers.
- Prevention programs promoting blood pressure monitoring and on-site flu shots.
- Managed care of employees returning to work after an extended absence, offered through the company's award-winning Disability Management Program.

Leveraging a Diverse Workforce

OPG is committed to building supportive workplaces where employees can recognize

External Stakeholder and Employee Relatio

Helping Others In Tangible Ways

OPG employees have a long tradition of giving back to their communities. Here are just two examples from 2002 that illustrate how employees at Nanticoke, Pickering and OPG's Head Office chose to lend a helping hand.

The Executive Director of the Nanticoke Women's Shelter, Reginal Homeniuk, had nothing but praise for members of OPG's Nanticoke Diversity Committee, who coordinated a drive for the shelter to coincide with the 2002 White Ribbon Campaign. After learning residents of the shelter had a particular need for furnishings to get them started in new homes, our employees got busy and collected a washing machine, furniture and about 100 bags full of donated items.

Employees from across the company were inspired to donate a large quantity of business clothing to the Dress Your Best (DYB) program in 2002. DYB addresses the needs of men and women who otherwise wouldn't have the appropriate clothing for job interviews and employment. Jessica Roelink, DYB's Volunteer Executive Director, says *"helping people find employment is a direct step to curing poverty, so the clothing contributed means a great deal to individuals, to society and to our economy."* She added, *"On behalf of our volunteer staff and future recipients, we would like to thank you for making such a large donation of quality job- appropriate clothing."*

their full potential. The newly merged Diversity and Ombuds function streamlines the identification and resolution of employee issues related to fairness and equity, and ensures that our employment systems truly and objectively recognize and promote merit. In every respect, a healthy workplace in which all employees feel valued makes for a better, stronger business.

Manager, supervisor and employee workshops were held throughout OPG in 2002 to promote an inclusive approach to diversity and demonstrate the importance of negotiating and mediating differences in the workplace. OPG's head office building has Quiet Rooms for prayer and meditation; both Darlington and Pickering facilities have set aside space for Christian and Muslim prayer.

OPG introduced a workplace violence prevention program in 2002 that also addresses the needs of employees who may need counseling or medical attention.

The Tripartite and Site Diversity Committees continued their efforts to address local issues as well as raise awareness of diversity issues while participating in events such as the White Ribbon Campaign.

Power Within Achievement Awards

OPG's Power Within Achievement Awards pay tribute to the outstanding accomplishments of its skilled, determined and committed employees in nine categories. A Community Service Excellence category was established in 2002 to encourage and reward employees for exceptional commitment and service to their community. At this year's awards ceremony, 75 employees were honoured for achievements ranging from personal leadership to production team excellence. These award winners truly embody the company's vision of excellence.

Our Environment Award recognizes employees who make an extraordinary contribution to a more sustainable energy future or show outstanding protection of the environment, while meeting our business needs. The 2002 Environment Award winners for spearheading a project to locate

one of North America's largest wind turbines adjacent to the Pickering Nuclear site were Chuck Edey (Senior Business Development Advisor), Murray Paterson (Manager, Business Development), Phil Stevens (Project Manager), Marc Curle (Regional Maintainer), Mark Guy (Technical Supervisor), Paul Lafontaine (Asset Manager) and Tanya Mushynski (Solicitor).

Work-Life Balance

Managers and supervisors across OPG provide accommodation and flexibility to individual employees to assist them to balance their work and personal lives – this may entail juggling child or elder care, accommodation of physical or psychological considerations, or involvement in community or charitable work. Our collective agreements provide flexibility ranging from job sharing to telecommuting arrangements.

Each year, OPG hosts a variety of events that it hopes will help employees balance the stresses of work and home. In part, these special events assist family members to better understand our company:

- OPG Family Day at Canada's Wonderland
- Children's Holiday parties
- Discovery Day at Pickering Nuclear
- Winterlude at Nanticoke
- OPG Breath of Hope Relay
- Take Your Kids to Work (with over 800 students participating at sites across Ontario in 2002).

OPG supports two day care centres – Hydrokids-OPG at Head Office and Bright Lights Childcare at our Kipling location. These centres provide OPG employees with a sense of security in knowing that their children are nearby and in good hands. Their convenient locations close to the workplace enhance work-life balance.

Code of Business Conduct

OPG's Code of Business Conduct reinforces our belief that personal values and integrity are the source of sound, ethical business decisions, including respect for the environment and a commitment to health and safety. In 2002, OPG launched its "Ethics Matters" training program for employees. As John Murphy, OPG's Chief Ethics Officer, said during the training:

"We must continue to exemplify the core values that are the foundation of this company:

- *Respect for others*
- *Integrity and fairness in our actions*
- *Stewardship of the social and environmental attributes of our communities."*

Our Chief Ethics Officer reports directly to OPG's President and CEO and provides an annual report to the Human Resources and Governance Committee of the Board of Directors on our ethics program.

Achievement Awards

In 2002, Brian Helson and Jeff Cannon of Pickering Nuclear received the Community Service for Excellence Award for "Sights and Sounds of Fire", a hands-on program developed for children that focused on fire safety. Their program was presented on a voluntary basis. Also recognized with the Award was Peter Porter of Pickering Nuclear, who won for teaching First Aid to his OPG colleagues and to the community at large. An eight-year volunteer for St. John Ambulance in Durham Region, Peter had taken several leadership roles in the organization. Recently, he was named to the Order of St. John, an exclusive honour that recognizes exceptional service.

BUILDING TRUST

OPG believes in contributing to the communities in which it operates. Our support to communities across Ontario takes many forms – employment, purchase of goods and services (see also Adding Economic Value, Contributing to the Economy of Ontario),

contributions to environmental and charitable organizations, volunteerism and fundraising. We seek guidance from community leaders and elected officials on how we can serve the community better, and work hard to keep them informed about our operations.

Corporate Citizenship Program

In 2002, OPG's Corporate Citizenship Program supported more than 600 environmental, educational and community initiatives that contributed to the well-being of the communities where we operate. By giving more, but smaller, contributions at the "grassroots" level, the company has reached a wider spectrum of our site communities and is helping to improve the quality of life for more people in those communities. Grassroots beneficiaries include wildlife or habitat restoration projects, recycling programs, youth amateur sports teams, science fairs, engineering competitions, and student awards/scholarships to name just a few.

Specific examples of our corporate citizenship program in action include:

- **Environmental Earth Angels:** OPG has partnered with Environmental Earth Angels for the past three years to promote environmental education and tree planting programs in 14 primary schools in Durham, Mississauga, and Niagara involving 9,100 students. Under teacher supervision and tied to curriculum requirements, students design, plan, tree plant, and maintain their outdoor schoolyard environment. Schools are provided with ten 13-foot deciduous trees and materials for their "Tree Plan." Teachers, students, parents and local community leaders all participate in the "tree planting", taking pride in their accomplishments and efforts to create a cleaner and healthier environment.

  OPG's Lakeview Generating Station has been a strong supporter of Environmental Earth Angels Tree Planting Program at Applewood Acres School, Mississauga, for developmentally challenged children. In 2002, Lakeview provided additional support for the school's

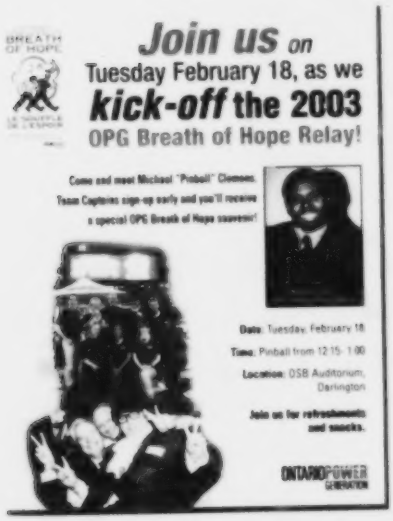
Peace Garden, which now includes a custom bench and butterfly garden. *"The project teaches students about the importance of helping the environment and enables them to take ownership and pride in the garden while recognizing how their efforts can make a difference"* says Suzanne Bennett, Vice Principal at Applewood Acres. The garden also serves as a learning tool for staff and students and is used for environmental studies, science, graduation ceremonies, and special events for a very special group of students.

- **Ecosuperior Fluorescent Light Recycling Program:** In 2002, residents in Thunder Bay and Northwestern Ontario had the opportunity to recycle their spent four foot fluorescent light tubes through The Ecosuperior Ontario Power Generation Fluorescent Light Recycling Program. Fluorescent light tubes

consume much less energy than standard light bulbs; however, they do contain mercury. The program was aimed at diverting mercury from both the waste stream and the environment. There was no charge for recycling up to 10 bulbs per family. This program was a new initiative on the part of EcoSuperior to reduce mercury in the Lake Superior Basin where mercury contamination is a very serious issue. OPG's Thunder Bay Generating Station was pleased to be part of such an innovative program that supports our vision of sustainable development.

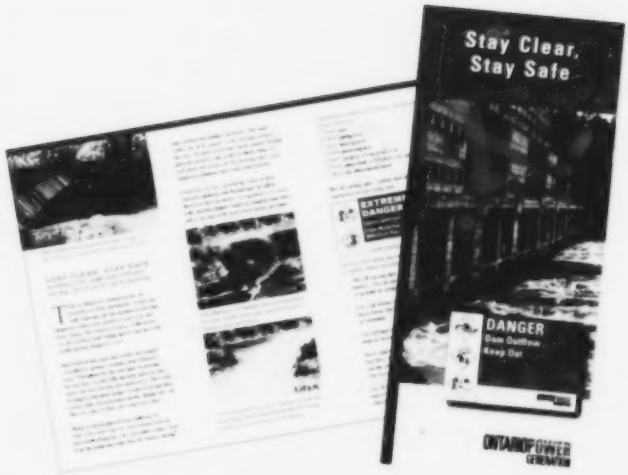
- **Ontario Science Centre Sponsorship:** In 2002, once again OPG helped energize the Ontario Science Centre (OSC) as Corporate Sponsor of March Break. Over 50 OPG ambassadors and the OPG mobile exhibit were on hand to teach children about electricity. A "Fun with Energy" Educational Activity Folder and renewable energy tattoos were developed and distributed to over 75,000 young people.

- **The Lung Association's Breath of Hope Relay:** As a Founding and Title Partner of The Lung Association's Breath of Hope Relay(s), OPG and its employees have been instrumental in helping to raise over $400,000 in support of the Association's lung health research and education programs. The Breath of Hope Relay has become The Lung Association's premiere fundraising event. As a company committed to improving quality of life, the environment and education, the partnership with The Lung Association was a natural fit. Since inception in 2001, Breath of Hope Relays have been held in Toronto, Ottawa and Sarnia with almost 200 teams and 3,000 people participating. OPG employees and their friends and family members account for almost half of the participants that walked, jogged and ran the relays to help in the fight against lung disease. Thanks go to all employees who, as participants or donors, answered the call.


Join us on
Tuesday February 18, as we
kick-off the 2003
OPG Breath of Hope Relay!
Come and meet Michael "Pinball" Clemons.
Team Captains sign up early and you'll receive
a special OPG Breath of Hope souvenir!
Date: Tuesday, February 18
Time: Pinball from 12:15- 1:00
Location: OSB Auditorium,
Darlington
Join us for refreshments
and snacks.
ONTARIO POWER

Stacey McNeill, Nuclear Business Services, Darlington, organized a baseball game involving approximately 30 management staff from our Pickering and Darlington generating stations which raised almost $6,000 for the Durham Regional Cancer Centre. OPG employees volunteered their time as umpires and scorekeepers. A great time was had by all for a worthy cause.

- **In Kind Canada and Computers for Schools:** In 2002, OPG brought In Kind Canada (IKC) and The Computers for Schools Program (CFSP) staff together noting their complementary mandates. As a result, IKC and CFSP, with Founding Support from OPG, have initiated the South Western Ontario Technology Access Pilot Project to serve charities and not-for-profits better by sharing facilities, processing and allocating surplus



Advertising to Inform

One of the ways we inform our neighbours about our operations and community involvement is through paid advertising in local community newspapers.

Our ads may, for example, recognize a local sports team we sponsor, or congratulate an employee who has made an outstanding contribution to the community.

Each year we run ads about the dangers of coming too close to hydroelectric dams and stations. The theme for 2002 and 2003 is "Stay Clear, Stay Safe – Hydroelectric Dams and Stations are not Places for Recreation".

technology resources for economies of scale. The pilot will run through 2003 and will be evaluated thereafter with a view to expanding the joint venture to other parts of Ontario. Half of all surplus technology items (computers, printers, monitors) will go to IKC for registered charities and half will go to CFSP for schools and libraries in southwestern Ontario, thus making OPG's surplus goods available to a wider spectrum of those in need.

- **Bikeshare Program**: As the Founding and Title Sponsor of the Community Bicycle Network's Bikeshare Program, which operates as a bicycle lending library in the Greater Toronto Area, OPG helped Bikeshare staff expand the program from 50 bicycles in 2001 to over 200 bikes on the road, and almost 500 members, in 2002. OPG's contribution went beyond financing, to helping program staff put a business plan into effect. In 2002, OPG was awarded The City of Toronto's Bicycle Friendly Business Award for the "best large business", in recognition of the company's support for cycling as a sustainable transportation option for employees and the public.

Keeping Our Neighbours Informed

Whether it's a face-to-face meeting with an elected official, a formal presentation to a City Council, a speech to the local Rotary Club, or knocking on doors in our plant communities, OPG is committed to keeping our neighbours informed about our company.

For example, in Lambton County, the first-ever "door-to-door" was held last spring. Residents were visited by volunteer staff and provided with information and the opportunity to talk to an employee from our plant about our operations. In Haldimand and Norfolk Counties, staff from Nanticoke Generating Station held their second door-to-door. In total, volunteers knocked on over 5,000 doors.

Membership in various local organizations also helps OPG stay connected with the community. OPG staff are active members of associations such as the Clarington Board of Trade, the Lambton Environmental Association,

the Haldimand Stewardship Council, St. Lawrence River Institute and the Ajax-Pickering Board of Trade.

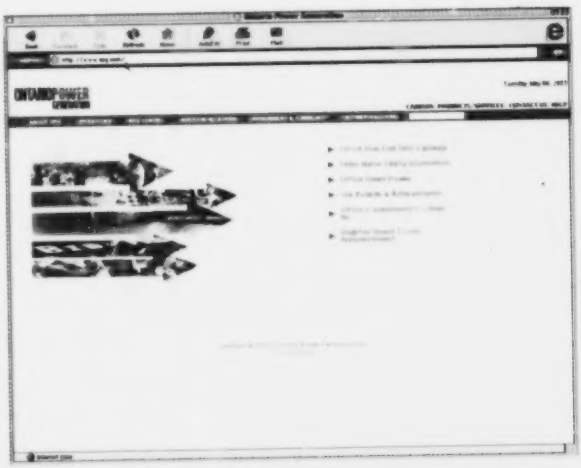
Partners in Education

As a tribute to OPG's contribution to education, the Conference Board of Canada awarded our company the National Partners in Education Award in 2002. This award recognizes Generating Futures, a partnership between Darlington Nuclear Station and Courtice Secondary School, which has significantly increased enrolment in technology courses. OPG provides this school with learning materials such as nesting boxes and robotics, as well as sponsoring an electric vehicle competition.

OPG's commitment to education goes back many years. For example, since 1991, close to 350 Grade 12 students have spent a full semester at Nanticoke Generating Station, splitting their time between the classroom and job shadowing. This program is a partnership between OPG, the Grand Erie District School Board, the Power Workers' Union, and the Society of Energy Professionals.

- Pickering and Darlington Information Centres are available to students interested in learning about electricity and nuclear energy. Each year, the centres present to about 22,000 students.

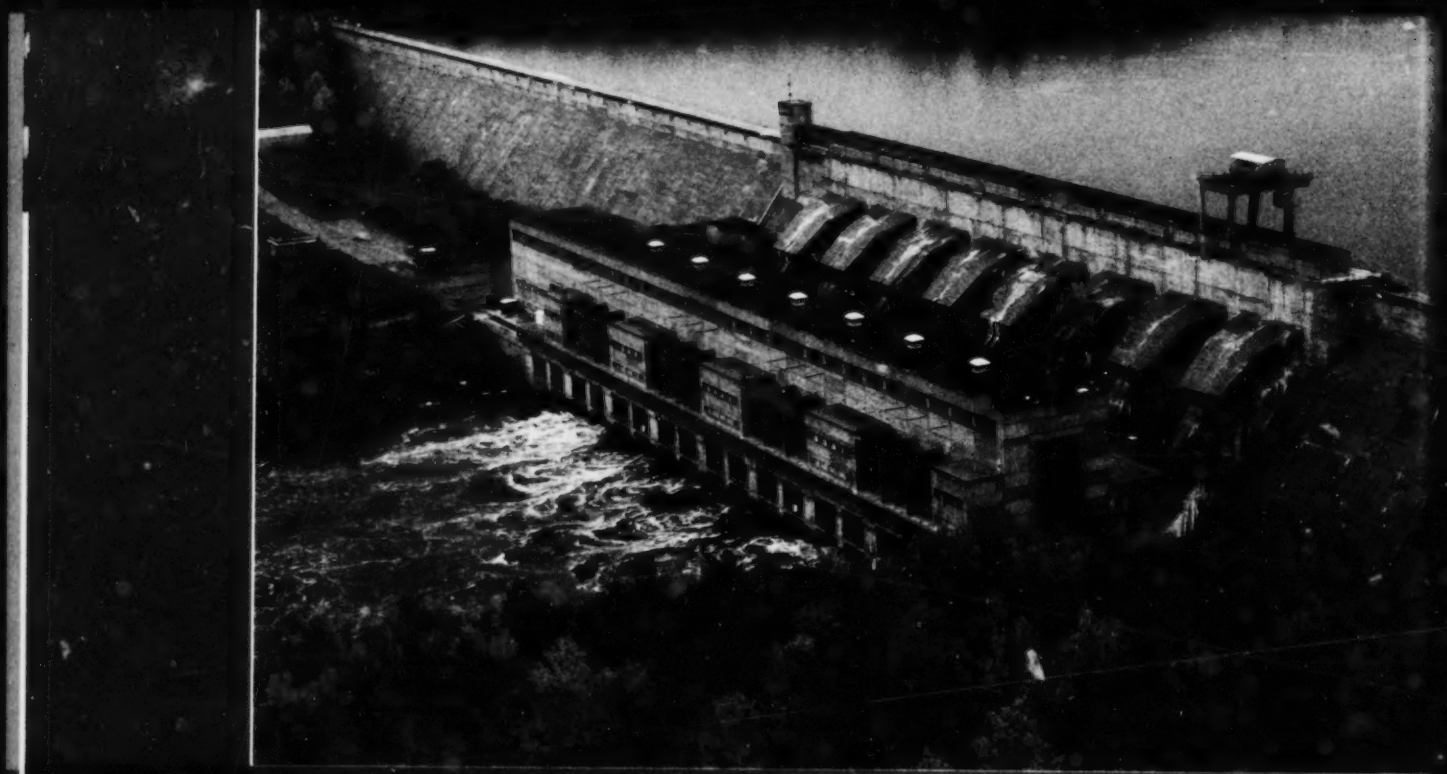
- Lambton College and Lambton Generating Station have worked in partnership over the years to provide technical education to students. In addition to financial support, OPG donated a control panel to the college for use in training operators.



OPG on the Net

Ontario Power Generation's Web site (www.opg.com) is a comprehensive source of information about the company. In addition to technical, environmental and financial information about OPG's generating facilities, you can access copies of our annual report, corporate citizenship report and nuclear report cards. There are also texts of speeches and news releases, plus convenient links to other electricity industry sites.

All e-mail inquiries are answered.



Adding Economic Value

CONTRIBUTING TO THE ECONOMY OF ONTARIO

OPG sells energy directly into the real time energy spot market, which is operated by the Independent Electricity Market Operator. As such, the majority of OPG's revenue is derived from spot market sales for which OPG receives a variable price based on supply and demand. Additionally, we sell fixed-price commodity and value-added energy products and services directly to large- and mid-sized commercial and industrial businesses, and energy retailers. We do not sell electricity directly to residential customers.

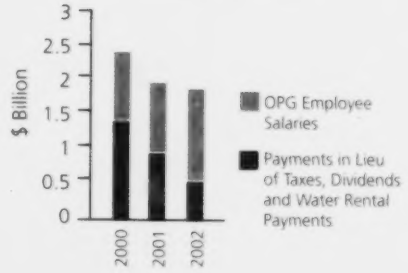
Earnings for the year were $47 million or $0.18 per share, compared with earnings for the year ended December 31, 2001 of $152 million or $0.59 per share. Our financial results were negatively affected by transitional price relief for certain industrial customers, corporate restructuring charges, additional costs of the Pickering A return to service project, and a diminished asset base resulting from decontrol of nuclear and hydroelectric generation. We set aside more than $900 million for customer rebates in accordance with OPG's requirements under the province's Market Power Mitigation Framework.

Employee Compensation and Provincial Payments

To attract and retain a highly qualified workforce OPG offers employees competitive compensation. In 2002, total compensation to OPG employees totaled approximately $1.3 billion (see Figure 7). Since most OPG employees live in Ontario and purchase their goods and services locally, this compensation yields a substantial transfer of wealth back to the province.

OPG creates additional benefit for the provincial economy through payments made in lieu of taxes, dividends and water rental payments. In 2002, these payments totaled nearly $545 million. The lower transfer of payments realized in 2002, relative to previous years, was due to lower income tax payments.

Figure 7 OPG salaries and payments made to the Province of Ontario in lieu of taxes, dividends and water rental payments. Source: OPG



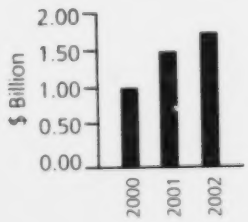
Purchase of Goods and Services

Through the purchase of goods and services, OPG also supports the Province of Ontario.

OPG creates economic value for the government and residents of Ontario. Value creation is realized through technical innovations in electricity production and consumption, competitive employee compensation programs, local procurement and cash transfer payments to the province.

In 2002, the total purchase of goods and services in Ontario by OPG totaled $1.65 billion (see Figure 8).

Figure 8 Total purchase of goods and services by OPG within Ontario. Source: OPG



Scholarship Programs

OPG supports several scholarships to university, college and high-school students across Ontario, including:

- **University Engineering Award:** granted to a student in an electrical, computer, mechanical, chemical or environmental engineering field.
- **Community College Technician/ Technology Award:** granted to a student in an electrical, mechanical, computer, chemical or marine engineering field.
- **Negahneewin Incentive Award at Confederation College:** granted to a native student in a general vocational program, engineering technology or related program, or business administration.
- **John Wesley Beaver Memorial Award (University and Community College):** granted to students of native ancestry entering into engineering, technology, environmental studies, forestry, biology, land use and environmental planning, or business.

CUSTOMER SOLUTIONS GROUP

The portfolio of products developed by OPG Customer Solutions Group gives customers a range of choices for managing energy price volatility in a deregulated market.

Adding Economic Value

CONTRIBUTING TO THE ECONOMY OF ONTARIO

OPG sells energy directly into the real time energy spot market, which is operated by the Independent Electricity Market Operator. As such, the majority of OPG's revenue is derived from spot market sales for which OPG receives a variable price based on supply and demand. Additionally, we sell fixed-price commodity and value-added energy products and services directly to large- and mid-sized commercial and industrial businesses, and energy retailers. We do not sell electricity directly to residential customers.

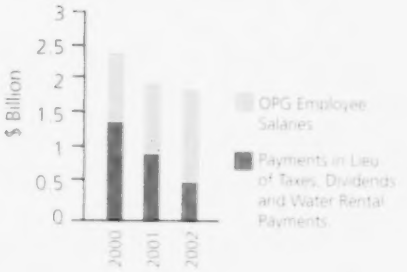
Earnings for the year were $47 million or $0.18 per share, compared with earnings for the year ended December 31, 2001 of $152 million or $0.59 per share. Our financial results were negatively affected by transitional price relief for certain industrial customers, corporate restructuring charges, additional costs of the Pickering A return to service project, and a diminished asset base resulting from decontrol of nuclear and hydroelectric generation. We set aside more than $900 million for customer rebates in accordance with OPG's requirements under the province's Market Power Mitigation Framework.

Employee Compensation and Provincial Payments

To attract and retain a highly qualified workforce OPG offers employees competitive compensation. In 2002, total compensation to OPG employees totaled approximately $1.3 billion (see Figure 7). Since most OPG employees live in Ontario and purchase their goods and services locally, this compensation yields a substantial transfer of wealth back to the province.

OPG creates additional benefit for the provincial economy through payments made in lieu of taxes, dividends and water rental payments. In 2002, these payments totaled nearly $545 million. The lower transfer of payments realized in 2002, relative to previous years, was due to lower income tax payments.

Figure 7 OPG salaries and payments made to the Province of Ontario in lieu of taxes, dividends and water rental payments. Source: OPG



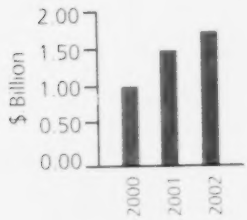
Purchase of Goods and Services

Through the purchase of goods and services, OPG also supports the Province of Ontario.

OPG creates economic value for the government and residents of Ontario. Value creation is realized through technical innovations in electricity production and consumption, competitive employee compensation programs, local procurement and cash transfer payments to the province.

In 2002, the total purchase of goods and services in Ontario by OPG totaled $1.65 billion (see Figure 8).

Figure 8 Total purchase of goods and services by OPG within Ontario. Source: OPG



Scholarship Programs

OPG supports several scholarships to university, college and high-school students across Ontario, including:

- **University Engineering Award:** granted to a student in an electrical, computer, mechanical, chemical or environmental engineering field.
- **Community College Technician/ Technology Award:** granted to a student in an electrical, mechanical, computer, chemical or marine engineering field.
- **Negahneewin Incentive Award at Confederation College:** granted to a native student in a general vocational program, engineering technology or related program, or business administration.
- **John Wesley Beaver Memorial Award (University and Community College):** granted to students of native ancestry entering into engineering, technology, environmental studies, forestry, biology, land use and environmental planning, or business.

CUSTOMER SOLUTIONS GROUP

The portfolio of products developed by OPG Customer Solutions Group gives customers a range of choices for managing energy price volatility in a deregulated market.

Adding Economic Value

When the Ontario government deregulated electricity in the province in May 2002, OPG was ready to compete in the open market. Our Customer Solutions Group had developed a value-added portfolio of energy products and services for customers in commercial and industrial sectors. This portfolio included products and solutions for risk management, productivity, green power and distributed generation.

With the passage of Bill 210, the Province effectively suspended the deregulation of the retail electricity market for low volume customers, while the wholesale market remained competitive. Still, OPG's Customer Solutions Group remains committed to helping customers to plan, purchase and manage their use of energy as effectively and cost-efficiently as possible. As a result, the Customer Solutions Group hopes to be the provider of first resort to all its customers.

Information and Productivity Solutions

OPG has responded to customer needs for information and products that will translate into productivity gains, as well as take advantage of new opportunities in the deregulated energy market. Here are some examples: The **Envision™ Energy** management software allows commercial and industrial customers to collect and analyze energy and other utility consumption data from their utility meters. Since the software collects real information about a company's operations, the ensuing data can be translated into real cost savings for our customers. OPG plans to expand Envision™ features and functions in 2003. For example, Envision™ will be capable of monitoring and managing emissions, an application that will be very beneficial under the Kyoto Protocol. OPG's sustaining objective for Envision™ will be for it to meet, and exceed, the expectations of our customers by providing real-dollar benefits to their operations.

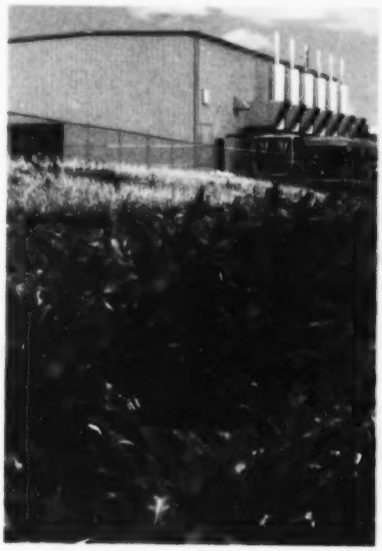
In 2002, OPG also developed administrative products that both simplify customers' electricity bills and provide useful data about their energy consumption.

For example, **Retail Consolidated Billing** brings together the customer's energy billing charges from multiple locations, or from multiple vendors, and consolidates them in a single document. This product provides companies with insight into their energy consumption, enabling them to take better charge of their planning, purchase and consumption of energy.

OPG's new **Verification Services** helped wholesale market customers to confirm the accuracy of their bills. Verifying meter readings, reconciling the data with variable electricity rates, and ensuring the calculations are correct, can be an onerous task. Verification Services have simplified the billing task for companies so they focus on their core businesses, not energy verification.

GREEN POWER

Evergreen™ Energy power is an important component of OPG's vision to remain a sustainable energy company, and we are encouraged that customers are asking for it. By green power, we refer to low environmental impact electricity generated from renewable energy resources such as wind, solar, biomass and low-impact hydroelectric facilities. All green power sources used to supply OPG's Evergreen™ environmentally friendly products are certified under the federal government's EcoLogo™ program. Switching to green power is easy and straightforward for customers. Companies can purchase a small percentage of their energy as green power.



Green power is good for business: Buying green power makes a strong statement about the values of an organization from environmental and

social perspectives. Many consumers take a company's values into account when purchasing or making investment decisions, as demonstrated by the rapid growth in assets under management in socially responsible mutual and pension funds.

Green power is good for the environment: Since green power is primarily derived from sustainable sources, it reduces our dependence on carbon-based, non-renewable resources, and by corollary avoids smog, acid gas and greenhouse gas emissions. The benefits are measurable – each MWh of Evergreen™ power could avoid NO, SO_2 and CO_2 emissions by as much as 0.45 kg, 0.53 kg and 900 kg, respectively, when compared to the equivalent amount of electricity generated by a new coal-fired plant.

Initiatives

OPG is determined to remain one of the leading suppliers of green power in Ontario.

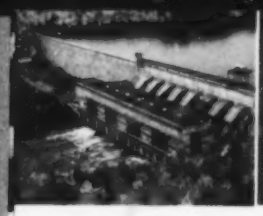
Pickering Wind Generating Station: In September 2002, the Pickering Wind Generating Station completed its first full year of operation. Total output was about 2.9 GWh. However, OPG expects availability and capacity to improve steadily in coming years. The Pickering wind project provided valuable information for finalizing the design of the 1.8 MW Vestas turbines used at the Huron Wind project.

Huron Wind : Wind power is one of the fastest growing sources of electricity generation in the world. Huron Wind, the first commercial wind farm in Ontario, was officially opened in December 2002, in Kincardine. Located adjacent to the Bruce Power generating station on the shores of Lake Huron, the five-turbine, 9 MW wind farm is capable of providing for the annual electricity needs of 3,000 homes. Initially, Huron Wind was a partnership between OPG and British Energy Canada. Subsequently, a consortium of Canadian investors, comprised of Cameco Corporation, TransCanada Pipelines Limited and BPC Generation Infrastructure Trust, reached an agreement to acquire the majority interest in Bruce Power from British Energy, including its stake in Huron Wind.

Healey and McVittie Generating Stations: Healey Falls and McVittie re-developments will, when complete, add a total of 8.2 MW of new EcoLogo™-certified capacity, enough to meet the needs of an additional 3,000 Ontario homes annually.

Lac Seul G.S.: In 2001, OPG announced plans to construct a new 12 MW low-impact hydro facility on the English River in northwestern Ontario, adjacent to our Ear Falls Generating Station. Environmental Assessment approval was obtained.

Wind Prospecting: OPG continues to scout potential locations for wind farms in Ontario. We are involved in a partnership that is optioning parcels of land to test wind conditions by erecting wind velocity meters. This effort is one of many steps involved in developing wind projects. In addition to collecting data, typically for at least a year, environmental assessments, zoning issues, and extensive consultations with local residents and governments remain prerequisites to developing any site.



Adding Economic Value

Sponsorships

In 2002, OPG Evergreen™ Energy provided financial support for the following green power events:

- National Engineering Week and Engineers are Everyday Heroes, with sessions around Ontario focused on wind energy
- Manure Management Conference, which was organized by the Canadian Environmental Industries Association in London, Ontario
- Canadian Wind Energy, which held its annual conference in Halifax, Nova Scotia
- Canadian Solar Industries Association, which held its annual conference in Ottawa
- Eco Fairs, which were held in Walkerton and Newmarket, Ontario

EcoLogo™ Certification

All OPG Evergreen™ Energy is generated from sites that are EcoLogo™-certified under the federal government's Environmental Choice Program, or the equivalent. OPG Evergreen supports initiatives to ensure that green certified power purchases are honoured by suppliers.

OPG VENTURES INC.

Through its corporate venture capital group, OPG Ventures Inc., OPG invests in enterprises that are developing and commercializing leading-edge energy technologies that could advance sustainable energy development. Since it was established in 2001, OPG Ventures has invested about $50 million in companies that are developing technologies that generate, transmit, store, transact or utilize electricity more efficiently, more cost effectively and with reduced environmental impact. OPG Ventures focuses its investments on renewable energy, distributed generation, portable power systems, energy storage, central generation plant optimization technologies, advanced grid components and control systems, and innovative end-use energy utilization technologies.

OPG Ventures invests in early-stage, private companies. While its main objective is to generate attractive financial returns, OPG Ventures is also helping to nurture new technologies that may enhance the efficiency and environmental performance of OPG's core operations. Overall, this investment strategy provides OPG with a window on emerging technologies that are likely to shape the power industry of the future.

In 2002, OPG Ventures was ranked by an independent monitoring agency as among the top 10 most active investors in North America in "cleantech", ventures involving renewable energy technologies.

Investments

One enterprise in which OPG has invested is Solena Group Inc. This company is commercializing a waste-to-energy technology that consumes a range of waste streams, producing net electrical energy without pollution related by-products or emissions. This process offers a potential solution to the growing problem of garbage disposal not only in many jurisdictions in Ontario, but worldwide. Solena's proprietary Plasma Gasification Vitrification technology uses high-energy plasma to break down incoming waste streams, including coal waste, biomass and municipal solid waste. The synthetic gas by-product is cleaned and combusted in a conventional gas turbine to produce electricity.

SmartSynch Inc. has also received investment capital from OPG Ventures. This group has developed a SmartMeter™ system that leverages existing wireless communication networks and the Internet to interface with electric meters in real time. This makes it possible for electric utilities to provide real-time pricing and load consumption information to commercial and industrial customers. This system in turn facilitates more efficient energy delivery, pricing and usage. Real-time pricing signals are a key element for increasing demand response that contributes to the development of more efficient, competitive retail electricity markets.

A third enterprise, Bowman Power Inc., designs and manufactures a combined heat and power microturbine system for use by commercial and industrial customers in distributed generation applications. While power generation is still dominated by centralized generation, distributed power generation is expected to assume a more important role. Bowman's 80-kilowatt integrated combined heat and power microturbine has an overall energy conversion efficiency approaching 90 per cent. It is being installed in such commercial establishments as schools and hospitals.

Technology Transfer

In its role as a technology transfer facilitator, OPG Ventures has introduced OPG's operations group to a range of advanced air emission control technologies that have the potential to cost-effectively reduce emissions from coal-fired generating plants. In one instance, OPG joined Powerspan Corp.'s Partner Development Program. For its participation, OPG received a preliminary design and budgetary proposal for use of Powerspan's multi-pollutant Electro-Catalytic Oxidation (ECO) emissions reduction technology at selected OPG coal-fired plants. This technology could significantly reduce OPG's air emissions to meet more stringent environmental requirements.

Awards

CANADIAN ELECTRICITY ASSOCIATION AWARD OF EXCELLENCE FOR EMPLOYEE SAFETY: OPG received the President's Silver Award for employee safety, referencing top-quartile performance among CEA member utilities in the All Injury Rate and Accident Severity Rate categories for two consecutive years (2000/2001).

FOREST STEWARDSHIP RECOGNITION PROGRAM: OPG employee Steve Hounsell was honoured in May by Wildlife Habitat Canada's Forest Stewardship Recognition Program for his leadership in promoting an innovative approach to OPG's global warming and reforestation efforts in southern Ontario. The program recognizes and promotes stewardship and conservation in Canada's forests.

CONFERENCE BOARD OF CANADA AWARD: OPG received a National Partners in Education Award from the Conference Board of Canada for the successful partnership between our Darlington Nuclear Generating Station and Courtice Secondary School. The partnership resulted in increased quality of education and significant growth in students registering for technology courses. The award was in the category of "elementary and secondary school partnerships" and was sponsored by RBC Royal Bank.

NATIONAL AWARD OF EXCELLENCE IN DISABILITY MANAGEMENT: The National Award of Excellence in Disability Management was awarded by the National Institute of Disability Management and Research to OPG for excellence in disability management in the category of Crown Corporation/Government Agency. The institute is a Canadian organization committed to reducing the human, social and economic cost of disability to workers, employers and society through education, training and research.

CERTIFICATE OF APPRECIATION: OPG received the Canadian Blood Services award for a successful blood program at the Sir Adam Beck Generating Station at Niagara Falls. OPG was acknowledged for facilitating the blood donor clinics, allowing employees to attend on company time and for providing beverages and snacks to donors.

CLIMATE PROTECTION AWARD: OPG received the U.S. Environmental Protection Agency's 2002 Climate Protection Award for its Energy Efficiency

OPG's commitment to sustainable development was recognized with accolades from various sources in 2002. The awards address each of the integrated components of sustainable development – environmental, economic and social stewardship.

Program. OPG was one of 20 recipients worldwide to receive this award. The EPA's Climate Protection Awards recognize exceptional leadership, personal dedication and technical achievements in protecting the Earth's climate.

TECHNOLOGY TRANSFER AWARD: The Electric Power Research Institute awarded two OPG employees, Blair Seckington and Tho Dien Le, for their key roles in furthering the development of mercury control technologies for the electric power industry. They shared the award with Rene Mangal of Kinectrics Inc., a former OPG subsidiary.

CORPORATE CITIZEN OF THE YEAR: The Municipality of Clarington awarded the citizenship award to OPG's Darlington Nuclear Generating Station for its many contributions to the local community.

CORPORATE ACHIEVEMENT AWARD: OPG was given this award for its "outstanding contribution and support" to the White Ribbon Campaign, representing men working to end men's violence against women.

CITY OF PICKERING ENVIRONMENT AWARD: The City of Pickering awarded OPG its Environment Award in recognition of the company's efforts to conserve and enhance the City's natural environment.

Looking Forward

OPG's long-term business success is dependent, in part, on our ongoing commitment to remain a sustainable development energy company.

Accordingly, our resolve to remain ahead-of-the-curve environmentally, economically and socially is reflected in various initiatives and plans:

- Continue to develop innovative means to advance employee, contractor and public safety.
- Expand our clean generating capacity by returning to service units at Pickering A and through our hydroelectric upgrade program.
- Lower emissions from fossil stations.
- Expand our green power generating capacity to meet customer demand.
- Expand our reforestation efforts in southern Ontario as part of OPG's contribution to reducing greenhouse gas emissions and restoring habitat to conserve forest biodiversity.
- Continue contributions to 2008, of approximately $454 million annually, to provide for long-term waste management and decommissioning of our nuclear stations.
- "Green" our supply chain to improve the environmental performance of our contractors and to encourage the purchase of environmentally-friendly products.
- Support "quality of life" enhancement in communities where we operate by:
  - encouraging local environmental, educational and community initiatives across Ontario through volunteer work and charitable donations of employees.
  - purchasing goods and services from local businesses and suppliers.

Maintaining open and effective communication regarding sustainable development performance will remain an ongoing commitment by OPG. Full disclosure will enable stakeholders to assess our strengths and areas that require improvement. Accordingly, OPG will continue to participate in sustainable development performance and communications benchmarking surveys, which in recent years have included:

- Sustainability in the Electricity Utility Sector 2002, by the World Business Council for Sustainable Development. The project was co-chaired by OPG and Eskom, the South African utility.
- Stepping Forward: Corporate Sustainability Reporting in Canada, by Stratos Inc.
- Energy Sector Benchmark: Sustainability Profiling of Utility Peers 2002, by Five Winds International.
- Evaluation of OPG's Towards Sustainable Development 2001 Progress Report, by Research Strategy Group Inc.
- Ontario Power Generation Towards Sustainable Development 2001 Progress Report, an evaluation by the International Institute for Sustainable Development in 2002.

These latter two professional assessments of OPG's Towards Sustainable Development 2001 Progress Report indicated that the report was well received. Indeed, Stephan Barg, Senior Corporate Advisor, International Institute for Sustainable Development, described our 2001 report as "A very good report, well presented and with good detail." Building on input from professional assessments of our report in 2001, this 2002 report reflects expanded coverage of the economic and social dimensions of sustainable development, and the contributions made by OPG in these areas.

OPG's commitment to environmental, economic and social stewardship is good business and good governance that creates value for our shareholder. Accordingly, this report is a testament to OPG's resolve to remain a practitioner of sustainable development.

Auditor's Report

To: Ron Osborne
President and Chief Executive Officer
Ontario Power Generation Inc.

We have been engaged by Ontario Power Generation Inc. (the "Company") to audit the collation, at the corporate office, of the environmental and production data in Appendix A and Appendix B (the "Environmental Information") for the year ended December 31, 2002 and for the year ended December 31, 2001 for National Pollutant Release Inventory ("NPRI") information as reported in the Company's "Towards Sustainable Development 2002 Progress Report ("SD2002")".

The SD2002 and the Environmental Information therein which is subject to our engagement, are the responsibility of the Company's management. Our responsibility is to express an opinion whether the Environmental Information subject to our engagement has been collated, in all material respects, in accordance with the criteria developed by management as described in Compilation Criteria in the box to the right, and has been properly transcribed and aggregated and consistently presented from year to year, and is supported, in all material respects, by appropriate, underlying evidence.

Our engagement was not intended to provide assurance on the Company's compliance with environmental laws and regulations.

We did not carry out any work on data reported in respect of future projections or targets. We are not providing commentary on the data gathering and measurement processes outside of the corporate office.

Compilation Criteria

Our sustainable development reporting accounts for only those facilities where we have environment, health and safety responsibilities, and is not based on financial ownership. The following criteria have been used to compile the data included in this report:

Inclusion Principles

- OPG reports 100% of all environmental and financial data for generating facilities for which OPG holds effective control or the operating permit or licence, regardless of financial ownership.
- OPG reports environmental information for joint venture activities in the proportion of ownership that OPG retains.
- OPG reports any data from its facilities or operations that were discontinued in any calendar year.

Reporting Entity

- OPG does not include activities done by OPG joint venture partners.
- Covers only direct operational impacts; does not cover supply chain impacts like emissions from product suppliers.

Reporting Scope

- The data in the report covers the period January 1, 2002 to December 31, 2002.
- This report covers all three elements of our sustainable development performance – environmental, economic and social data. We only claim those achievements that are directly attributable to our actions.
- We do not claim upstream or downstream impacts or benefits.

Our audit was conducted in accordance with the standards for assurance engagements established by The Canadian Institute of Chartered Accountants. These standards require that we plan our audit to obtain reasonable assurance that the data are free from material misstatement. Our audit included examining, on a test basis, evidence supporting the amounts and disclosures in the Environmental Information, which was subject to our engagement and performing such procedures as we considered necessary in the circumstances. The main elements of our audit were:

- An examination of the suitability of the compilation criteria established by management.
- The examination, on a test basis, of the procedures for gathering and processing Environmental Information.

Auditor's Report

- The examination, on a test basis, of evidence supporting the quantitative and qualitative information as far as it forms the subject matter of this engagement.

- The assessment as to whether the Company has appropriately applied the Compilation Criteria on the preceding page.

Considerations and Limitations

The preparation of the Environmental Information requires management to make estimates and assumptions that affect reported amounts and disclosures in the Environmental Information. Actual results could differ from those estimates.

It is important to read the environmental statements and graphs in the context of the explanatory information and the notes to the graphs and performance tables.

Environmental data are subject to many more inherent limitations than financial data, given both their nature and the methods used for determining, calculating or estimating such data.

Opinion

In our opinion, the environmental and production data in Appendix A and Appendix B, as reported in the SD2002, for the year ended December 31, 2002 and for the year ended December 31, 2001 for NPRI information contained in Appendix B, have been collated, in all material respects, in accordance with the criteria established by management as set out in Compilation Criteria on the preceding page and have been properly transcribed and aggregated and consistently presented from year to year.

We have not been engaged to report on whether the Company is in compliance with environmental laws and regulations and, accordingly, we do not express an opinion in this regard.

We have prepared our assurance report based upon terms of the engagement agreed with the Vice President, Sustainable Development, which are available upon request. Readers are cautioned that SD2002 and the assurance engagement that we have performed on the Environmental Information therein may not be suitable for other purposes.

Collation for the 2000, 1999, and 1998 Towards Sustainability Progress Report was audited by another firm of Chartered Accountants. As well, Water Use values for 2001 and preceding years have not been audited.

Deloitte & Touche LLP

Toronto, ON
May 19, 2003

APPENDIX A

Ontario Power Generation for the years ended December 31

Nuclear[1]

Totals may not add up due to rounding

General Information

Net Generation

Dose to Public

Pickering A & B G.S.

Generation capacity: Pickering A: 2,060 MW,
Pickering B: 2,064 MW

Located on Lake Ontario in the city of Pickering, each generating station has 4 units. Pickering A is temporarily out of service during the nuclear recovery program. Number of used fuel bundles stored on site: 492,796

Generation (net GWh)			
2002	2001	2000	1999
14,300	12,957	9,968	13,649

Dose to Public (μSv)			
2002	2001	2000	1999
4.8	6.8	3.6	13.1

Darlington G.S.[1]

Generation capacity: 3,524 MW
Located on Lake Ontario in the town of Clarington, 70 km east of Toronto. This generating station has 4 units.
Number of used fuel bundles stored on site: 213,832

Generation (net GWh)			
2002	2001	2000	1999
27,600	26,142	26,581	25,411

Dose to Public (μSv)			
2002	2001	2000	1999
1.2	1.2	1.8	3.8

[1] Excludes Bruce A and B generating stations which are leased on a long-term basis to Bruce Power L.P.

GLOSSARY

k	kilo	x 10^3	kg	= 1,000 grams
M	Mega	x 10^6	Mg	= one million grams = one tonne
G	Giga	x 10^9	Gg	= 1,000 tonnes
T	Tera	x10^{12}	Tg	= one million tonnes

kWh (kilowatt-hour) = unit of electricity production

MWh (megawatt-hour) = 1,000 kWh which is approximately equivalent to the electricity used by one household in a month

GWh (gigawatt-hour) = 1,000,000 kWh which is approximately equivalent to the electricity used by 80 homes in one year

TWh (terawatt-hour) = 1,000 GWh which is approximately equivalent to the electricity used by 80,000 homes in one year. In 2002, OPG generated about 116 TWh (net) of electricity

Gross generation (generally expressed in MWh) = Total electricity produced by a generating station

Net generation (generally expressed in MWh) = Gross generation minus internal energy use

Generation capacity (generally expressed in MW) = Indicator of generating station size based on its capacity to produce electricity on a continuous basis

APPENDIX A

Ontario Power Generation for the years ended December 31

Totals may not add up due to rounding

Nuclear[1]

General Information	Net Generation	Dose to Public

Pickering A & B G.S.

Generation capacity: Pickering A: 2,060 MW,
Pickering B: 2,064 MW

Located on Lake Ontario in the city of Pickering, each generating station has 4 units. Pickering A is temporarily out of service during the nuclear recovery program. Number of used fuel bundles stored on site: 492,796

Generation (net GWh)

2002	2001	2000	1999
14,300	12,957	9,968	13,649

Dose to Public (μSv)

2002	2001	2000	1999
4.8	6.8	3.6	13.1

Darlington G.S.[1]

Generation capacity: 3,524 MW
Located on Lake Ontario in the town of Clarington, 70 km east of Toronto. This generating station has 4 units.
Number of used fuel bundles stored on site: 213,832

Generation (net GWh)

2002	2001	2000	1999
27,600	26,142	26,581	25,411

Dose to Public (μSv)

2002	2001	2000	1999
1.2	1.2	1.8	3.8

[1] Excludes Bruce A and B generating stations which are leased on a long-term basis to Bruce Power L.P.

GLOSSARY

k	kilo	x 10^3	kg = 1,000 grams	kWh (kilowatt-hour) = unit of electricity production
M	Mega	x 10^6	Mg = one million grams = one tonne	MWh (megawatt-hour) = 1,000 kWh which is approximately equivalent to the electricity used by one household in a month
G	Giga	x 10^9	Gg = 1,000 tonnes	GWh (gigawatt-hour) = 1,000,000 kWh which is approximately equivalent to the electricity used by 80 homes in one year
T	Tera	x 10^{12}	Tg = one million tonnes	TWh (terawatt-hour) = 1,000 GWh which is approximately equivalent to the electricity used by 80,000 homes in one year. In 2002, OPG generated about 116 TWh (net) of electricity

Gross generation (generally expressed in MWh)	=	Total electricity produced by a generating station
Net generation (generally expressed in MWh)	=	Gross generation minus internal energy use
Generation capacity (generally expressed in MW)	=	Indicator of generating station size based on its capacity to produce electricity on a continuous basis

APPENDIX A

Ontario Power Generation for the years ended December 31

Fossil

Totals may not add up due to rounding

General Information

Net Generation and Emissions

Atikokan G.S.

Generation capacity: 215 MW
Located west of Thunder Bay, the station has 1 coal-fired unit equipped with low-NOx burners.

Generation (net GWh)

2002	2001	2000	1999
823	838	994	1,115

Emissions (tonnes)

	2002	2001	2000	1999
SO_2	4,928	4,480	4,820	5,560
NOx	1,013	950	1,100	1,310
CO_2	889,000	850,000	1,020,000	1,130,000

Lakeview G.S.

Generation capacity: 1,138 MW
Located in Mississauga, the station has 8 coal-fired units, 4 of which are currently mothballed.

Generation (net GWh)

2002	2001	2000	1999
2,455	3,081	2,905	3,271

Emissions (tonnes)

	2002	2001	2000	1999
SO_2	14,340	19,000	16,900	18,100
NOx	3,154	5,050	6,480	8,740
CO_2	2,340,000	2,760,000	2,700,000	3,000,000

Lambton G.S.

Generation capacity: 1,974 MW
Located on the St. Clair River south of Sarnia, the station has 4 coal-fired units, 2 of which are equipped with SO_2 scrubbers.

Generation (net GWh)

2002	2001	2000	1999
10,022	10,472	12,415	9,001

Emissions (tonnes)

	2002	2001	2000	1999
SO_2	29,910	28,300	41,400	27,300
NOx	9,790	11,800	14,800	12,800
CO_2	8,990,000	9,420,000	10,800,000	7,800,000

Lennox G.S.

Generation capacity: 2,140 MW
Located on Lake Ontario in the town of Greater Napanee. The station has 4 oil and/or natural gas-fired units.

Generation (net GWh)

2002	2001	2000	1999
2,762	3,243	1,288	2,393

Emissions (tonnes)

	2002	2001	2000	1999
SO_2	2,260	1,880	655	1,750
NOx	1,860	2,450	1,080	2,130
CO_2	1,460,000	1,880,000	843,000	1,600,000

Nanticoke G.S.

Generation capacity: 3,920 MW
Located on Lake Erie, the station has 8 coal-fired units fitted with low-NOx burners.

Generation (net GWh)

2002	2001	2000	1999
22,156	21,124	23,519	19,038

Emissions (tonnes)

	2002	2001	2000	1999
SO_2	86,670	86,500	92,900	81,800
NOx	24,420	22,400	25,200	24,300
CO_2	21,370,000	20,260,000	21,500,000	17,000,000

Thunder Bay G.S.

Generation capacity: 310 MW
Located in Thunder Bay, the station has 2 coal-fired units.

Generation (net GWh)

2002	2001	2000	1999
1,490	1,670	1,613	1,643

Emissions (tonnes)

	2002	2001	2000	1999
SO_2	9,100	8,810	7,490	7,720
NOx	2,042	1,970	1,870	2,090
CO_2	1,663,000	1,800,000	1,620,000	1,600,000

APPENDIX A

Ontario Power Generation for the years ended December 31

Totals may not add up due to rounding

Hydroelectric

General Information

Net Generation

Niagara Plant Group

Generation capacity: 2,289 MW
Includes 5 stations, HQ in Niagara area

Generation (net GWh)			
2002	2001	2000	1999
12,268	11,860	12,246	12,355

Ottawa/St.Lawrence Plant Group

Generation capacity: 2,571 MW
Includes 10 stations, HQ in Renfrew

Generation (net GWh)			
2002	2001	2000	1999
12,262	11,494	11,873	11,550

Northeast Plant Group

Generation capacity: 1,287 MW
Includes 13 stations, HQ in Timmins

Generation (net GWh)			
2002	2001	2000	1999
4,758	4,740	4,671	4,958

Northwest Plant Group

Generation capacity: 659 MW
Includes 10 stations, HQ in Thunder Bay

Generation (net GWh)			
2002	2001	2000	1999
4,755	5,018	5,017	4,228

Evergreen™ Energy

General Information

Net Generation

Evergreen™ Energy

Total Generation capacity: 152 MW; HQ in North Bay

EcoLogo™-certified[1] Generation (net GWh)			
2002	2001	2000	1999
671	664	610	540

EcoLogo™-certified Green Power generation capacity from 32 OPG stations (29 small hydro stations-including 4 Northeast Plant Group stations), 2 wind turbines, and 50% of Huron Wind (5 wind turbines, partnership with a consortium[2] of Canadian companies): 134 MW (at Dec 31, 2002)

42	41		

EcoLogo™-certified Green Power capacity available from Power Purchase Agreements: 12 MW

713	704		

Total available EcoLogo™-certified Green Power capacity: 146 MW (as at Dec 31, 2002)

Other Generation (net GWh)			
2002	2001	2000	1999
24	31	29	17

Other capacity (non-EcoLogo™ - Eugenia Falls hydroelectric station; 6.1 MW

-	0.7	-	-

Other capacity pending EcoLogo™ certification in 2001, certified in 2002 (Pickering Wind G.S.): 1.8 MW

[1] EcoLogo™ is a registered mark and symbol of Environment Canada's Environmental Choice Program.

[2] In February 2003, British Energy sold British Energy (Canada) Ltd. (which included Huron Wind) to a consortium of Canadian companies which includes Cameco, TransCanada PipeLines, and a trust established by the Ontario Municipal Employees Retirement System (OMERS).

APPENDIX A

Ontario Power Generation for the years ended December 31

Fossil

Totals may not add up due to rounding

General Information

Net Generation and Emissions

Atikokan G.S.

Generation capacity: 215 MW
Located west of Thunder Bay, the station has 1 coal-fired unit equipped with low-NOx burners.

Generation (net GWh)

2002	2001	2000	1999
823	838	994	1,115

Emissions (tonnes)

	2002	2001	2000	1999
SO2	4,928	4,480	4,820	5,560
NOx	1,013	950	1,100	1,310
CO2	889,000	850,000	1,020,000	1,130,000

Lakeview G.S.

Generation capacity: 1,138 MW
Located in Mississauga, the station has 8 coal-fired units, 4 of which are currently mothballed.

Generation (net GWh)

2002	2001	2000	1999
2,455	3,081	2,905	3,271

Emissions (tonnes)

	2002	2001	2000	1999
SO2	14,340	19,000	16,900	18,100
NOx	3,154	5,050	6,480	8,740
CO2	2,340,000	2,760,000	2,700,000	3,000,000

Lambton G.S.

Generation capacity: 1,974 MW
Located on the St. Clair River south of Sarnia, the station has 4 coal-fired units, 2 of which are equipped with SO2 scrubbers.

Generation (net GWh)

2002	2001	2000	1999
10,022	10,472	12,415	9,001

Emissions (tonnes)

	2002	2001	2000	1999
SO2	29,910	28,300	41,400	27,300
NOx	9,790	11,800	14,800	12,800
CO2	8,990,000	9,420,000	10,800,000	7,800,000

Lennox G.S.

Generation capacity: 2,140 MW
Located on Lake Ontario in the town of Greater Napanee. The station has 4 oil and/or natural gas-fired units.

Generation (net GWh)

2002	2001	2000	1999
2,762	3,243	1,288	2,393

Emissions (tonnes)

	2002	2001	2000	1999
SO2	2,260	1,880	655	1,750
NOx	1,860	2,450	1,080	2,130
CO2	1,460,000	1,880,000	843,000	1,600,000

Nanticoke G.S.

Generation capacity: 3,920 MW
Located on Lake Erie, the station has 8 coal-fired units fitted with low-NOx burners.

Generation (net GWh)

2002	2001	2000	1999
22,156	21,124	23,519	19,038

Emissions (tonnes)

	2002	2001	2000	1999
SO2	86,670	86,500	92,900	81,800
NOx	24,420	22,400	25,200	24,300
CO2	21,370,000	20,260,000	21,500,000	17,000,000

Thunder Bay G.S.

Generation capacity: 310 MW
Located in Thunder Bay, the station has 2 coal-fired units.

Generation (net GWh)

2002	2001	2000	1999
1,490	1,670	1,613	1,643

Emissions (tonnes)

	2002	2001	2000	1999
SO2	9,100	8,810	7,490	7,720
NOx	2,042	1,970	1,870	2,090
CO2	1,663,000	1,800,000	1,620,000	1,600,000

APPENDIX A

Ontario Power Generation for the years ended December 31

Totals may not add up due to rounding

Hydroelectric

General Information

Net Generation

Niagara Plant Group

Generation capacity: 2,289 MW
Includes 5 stations, HQ in Niagara area

Generation (net GWh)			
2002	2001	2000	1999
12,268	11,860	12,246	12,355

Ottawa/St.Lawrence Plant Group

Generation capacity: 2,571 MW
Includes 10 stations, HQ in Renfrew

Generation (net GWh)			
2002	2001	2000	1999
12,262	11,494	11,873	11,550

Northeast Plant Group

Generation capacity: 1,287 MW
Includes 13 stations, HQ in Timmins

Generation (net GWh)			
2002	2001	2000	1999
4,758	4,740	4,671	4,958

Northwest Plant Group

Generation capacity: 659 MW
Includes 10 stations, HQ in Thunder Bay

Generation (net GWh)			
2002	2001	2000	1999
4,755	5,018	5,017	4,228

Evergreen™ Energy

General Information

Net Generation

Evergreen™ Energy

Total Generation capacity: 152 MW; HQ in North Bay

	EcoLogo™-certified[1] Generation (net GWh)			
	2002	2001	2000	1999
EcoLogo™-certified Green Power generation capacity from 32 OPG stations (29 small hydro stations-including 4 Northeast Plant Group stations), 2 wind turbines, and 50% of Huron Wind (5 wind turbines, partnership with a consortium[2] of Canadian companies): 134 MW (at Dec 31, 2002)	671	664	610	540
EcoLogo™-certified Green Power capacity available from Power Purchase Agreements: 12 MW	42	41		
Total available EcoLogo™-certified Green Power capacity: 146 MW (as at Dec 31, 2002)	713	704		

	Other Generation (net GWh)			
	2002	2001	2000	1999
Other capacity (non-EcoLogo™ - Eugenia Falls hydroelectric station: 6.1 MW	24	31	29	17
Other capacity pending EcoLogo™ certification in 2001, certified in 2002 (Pickering Wind G.S.): 1.8 MW	-	0.7	-	-

[1] EcoLogo™ is a registered mark and symbol of Environment Canada's Environmental Choice Program.

[2] In February 2003, British Energy sold British Energy (Canada) Ltd. (which included Huron Wind) to a consortium of Canadian companies which includes Cameco, TransCanada PipeLines, and a trust established by the Ontario Municipal Employees Retirement System (OMERS).

APPENDIX B

Ontario Power Generation for the years ended December 31

Totals may not add up due to rounding

Indicator	2002	2001	2000	1999
ENERGY GENERATION BY SOURCE (gross GWh)				
Fossil	41,600	42,100	44,500	38,000
Hydroelectric (Renewable) (excl Evergreen Energy)	34,300	33,200	34,600	33,700
Nuclear	44,800	51,200	64,300	65,900
Evergreen Energy (incl 4 N.E. Plant Group stations)	737	736	610	540
Total Internal Energy Generated	121,400	127,200	143,300	137,600
ENERGY GENERATION BY SOURCE (net GWh)				
Fossil	39,600	40,400	42,700	36,500
Hydroelectric (Renewable) (excl Evergreen Energy)	33,600	33,100	34,400	33,600
Nuclear	41,900	47,800	59,800	61,400
Evergreen Energy (incl 4 N.E. Plant Group stations)	737	736	610	540
Total Internal Energy Output	115,800	122,000	136,900	131,500
ENERGY CONVERSION EFFICIENCY OF FOSSIL GENERATING STATIONS				
Total Energy Input (GWh equiv.)	118,800	118,200	123,800	102,500
Net Energy Output (GWh)	39,600	40,400	42,700	36,500
Fuel Conversion Efficiency (%)	33.3	34.2	34.5	35.6
OPG INTERNAL ENERGY EFFICIENCY				
Gross Generation (GWh)	121,400	127,200	143,300	137,600
Net Generation (GWh)	115,800	122,000	136,900	131,500
Generation Energy Efficiency (%)	95.37	95.91	95.53	95.57
Internal Energy Saving - Cumulative since 1994 (GWh)	2,443	2,370	2,133	1,897
ATMOSPHERIC EMISSIONS - FOSSIL				
Total Gross Annual CO_2 Emissions (tonnes)	36,710,000	37,000,000	38,500,000	32,100,000
Total Gross Annual SO_2 Emissions (tonnes)	147,200	149,000	164,100	142,100
Total Gross Annual NOx Emissions (tonnes)	42,300	44,600	50,500	51,400
EMISSION RATES - FOSSIL				
CO_2 Emissions (tonnes/GWh-net)	927	916	901	880.4
SO_2 Emissions (tonnes/GWh-net)	3.72	3.69	3.84	3.9
NOx Emissions (tonnes/GWh-net)	1.07	1.1	1.18	1.41
ATMOSPHERIC EMISSIONS - NUCLEAR				
Total Gross Annual CO_2 Emissions (tonnes)	9,800	56,800	121,600	147,200
Total Gross Annual SO_2 Emissions (tonnes)	12	400	914	299
Total Gross Annual NOx Emissions (tonnes)	36	100	144	204

(n.b. Bruce steam plant not in operation in 2002.)

APPENDIX B

Indicator	2002	2001	2000	1999
ATMOSPHERIC EMISSIONS - OPG				
Total Gross Annual CO_2 Emissions (tonnes)	36,720,000	37,057,000	38,622,000	32,247,000
Total Gross Annual SO_2 Emissions (tonnes)	147,200	149,400	165,000	142,400
Total Gross Annual NOx Emissions (tonnes)	42,300	44,700	50,700	51,600
EMISSION RATES – TOTAL OPG				
CO_2 Emissions (tonnes/GWh-net)	315	303.8	282	245.2
SO_2 Emissions (tonnes/GWh-net)	1.26	1.23	1.21	1.08
NOx Emissions (tonnes/GWh-net)	0.36	0.37	0.37	0.39
NUMBER OF REPORTABLE SPILLS				
Category A Spills	0	0	0	0
Category B Spills	1	0	1	0
Category C Spills	26	18	28	43
PCB MANAGEMENT (tonnes)				
High Level PCB material in storage	4	21	65.5	39.9
High Level PCB materials sent for destruction	113	189	137	202
Estimated inventory of High-Level PCB material in service (Includes equipment in service at Bruce Power)	1424	1542	1,660	1,789
Low-Level PCB materials in storage	5	7	3.5	19.4
Low-Level PCB material sent for destruction	8	3	11.5	8.2
Estimated inventory of Low-Level PCB material in service	6	1	2.9	3.1
RADIOACTIVE WASTE MANAGEMENT				
Used fuel - annual production (tonnes of uranium)	969	800	1,005	1,071
Used fuel in Storage (tonnes of uranium)	27,429	26,460	25,657	24,520
Low & Intermediate Radioactive Waste produced (m^3)	4,817	5,299	4,774	4,613
Low & Intermediate Radioactive Waste stored (m^3)[1]	1,680	1,817	1,637	1,582
UTILIZATION OF SOLID COMBUSTION BY-PRODUCTS				
Total Ash and Gypsum Produced (tonnes)	1,550,100	1,620,000	1,808,700	1,466,300
Total Ash & Gypsum Recycled (tonnes)	807,560	799,000	762,000	643,200
HAZARDOUS WASTE GENERATION				
Solids (tonnes)	225	290	397	126
Liquids (kilolitres)	6100	7,941*	2,659	2,810
WATER USE (million m^3)				
Turbine flows - hydroelectric stations (total flow)[2]	447,600	433,800	441,900	422,900
Cooling and service water use (non-consumptive)	13,852	13,478	13,733	12,446

* Volume increase due to boiler cleaning at Pickering and disposal of water treatment wastes and resin at Darlington.

[1] The 2001, 2000 and 1999 values have been changed from the *Towards Sustainable Development 2001 Progress Report.*

[2] Excluding Sir Adam Beck P.G.S. and four Mississagi River stations sold in 2002.

APPENDIX B

National Pollution Release Inventory (NPRI)

NPRI Emissions, OPG: air, water, land[5] - tonnes unless otherwise specified	2001[1]	2000	1999	1998
Ammonia	28.93	30.6	44.4	55.3
Arsenic	27.13	33.9	30.6	29.6
Asbestos -	0	0	11.0[2]	0
Benzo(a)anthracene	0.011	0.013	NR[4]	NR
Benzo(a)phenanthrene	0	NR	NR	NR
Benzo(a)pyrene	0.006	0.006	NR	NR
Benzo(b)fluoranthene	0.009	0.012	NR	NR
Benzo(e)pyrene	0.010	0.012	NR	NR
Benzo(g,h,i)perylene	0.010	0.014	NR	NR
Benzo(j)fluoranthene	0	NR	NR	NR
Benzo(k)fluoranthene	0.1 kg	NR	NR	NR
Chromium	129.96	167.4	118.1	92.9
Cobalt	38.8	50.3	31.9	26.1
Copper	123.37	165.6	115.3	84.7
Dibenz(a,h)anthracene	0.003	0.004	NR	NR
Dibenz(a,j)acridine	0	0.019	NR	NR
Dibenzo(a,i)pyrene	0.001	0.001	NR	NR
7H-Dibenzo(c,g)carbazole	0	0.028	NR	NR
Fluoranthene	0.011	0.012	NR	NR
Hexachlorobenzene	185.85 grams	884.1 grams	NR	NR
Hydrazine	0.91	1.18	1.9	1.9
Hydrochloric Acid	8902.54	9728.3	7,037.7	6,709.6
Hydrogen Fluoride	520.1	597.1	339.4	295.0
Indeno(1,2,3-cd)pyrene	0.002	0.003	NR	NR
Lead	42.64	48.6	35.6	26.0
Manganese	172.46	211.7	142.3	157.9
Mercury	821.08 kg	836.1 kg	NR	NR
Nickel	89.18	103.9	74.7	64.0
Perylene	1 kg	NR	NR	NR
Phenanthrene	0.098	0.110	NR	NR
Polychlorinated dibenzo-p-dioxins + dibenzofurans	1.65 g TEQ[3]	1.24 g TEQ	NR	NR
Pyrene	0.014	0.015	NR	NR
Selenium	19.72	16.0	12.1	9.4
Sulphuric Acid	795.2	949.9	794.7	863.9
Zinc	99.86	109.9	76.8	81.9

[1] Year 2002 data was not available at the time of printing.
[2] Asbestos removed from service for disposal.
[3] g TEQ = grams Toxic Equivalent
[4] NR = not reported prior to 2000
[5] For detailed information on the breakdown of OPG's NPRI data by emissions to air, water, and land please visit the NPRI web site at http://www.ec.gc.ca/pdb/npri/npri_home_e.cfm

APPENDIX C

Ontario Power Generation Greenhouse Gas Action Plan

Ontario Power Generation is pleased to submit its fourth Greenhouse Gas Action Plan to Canada's Climate Change Voluntary Challenge and Registry Inc. (VCR). This continues the tradition established by our predecessor Ontario Hydro to report annually on greenhouse gas (GHG) emissions and actions to manage these emissions. The VCR designated our 1999, 2000 and 2001 Action Plans "Gold Champion Level Reporter".

This year's report is submitted under the cover of the Towards Sustainable Development 2002 Progress Report in order to present a more comprehensive look at our initiatives and achievements in managing GHG emissions in the context of sustainable development and to improve the efficiency of our reporting.

OPG's target is to stabilize net GHG emissions at 1990 levels beyond 2000. Our management of GHG emissions uses many options, including nuclear energy, energy efficiency, emissions trading, Green Power and carbon sequestration.

OPG has entered a second phase with its voluntary GHG emissions target. The original target to stabilize net GHG emissions at 1990 levels in the year 2000 was achieved with the use of over 12 million tonnes of CO_2 equivalent emission reduction credits (ERCs). In this phase, OPG will continue to stabilize net emissions at 1990 levels, but with a longer period for reconciliation of gross and net emissions. Because OPG currently relies on the purchase of a significant volume of ERCs to offset emissions to 1990 levels, the period for the purchase of ERCs has been extended beyond one year to allow investment in credits to promote new projects to reduce GHG emissions.

With Canada's ratification of the Kyoto Protocol, OPG expects to further revise its GHG target to support the implementation of Canada's Climate Change Plan.

In 2002, the operation of OPG's generation mix, two-thirds of which is virtually free of air emissions leading to global warming, together with actions completed or underway, have reduced or displaced over 71 million tonnes of CO_2 emissions. This Appendix describes our achievements.

Helen Howes

Helen Howes
Vice President, Sustainable Development

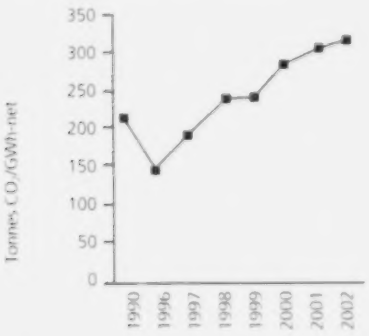
Appendix C

Greenhouse Gas Emissions

This report presents both gross and net GHG emissions for facilities owned and operated by OPG in 2002. CO_2 emissions from the fossil fleet are responsible for almost 98 per cent of GHG emissions. Direct gross CO_2 emissions in 2002 equaled 36.7 million tonnes, 400,000 tonnes lower than in 2001 due to slightly lower levels of fossil generation in 2002 (see Figure 5).

In 2002, the carbon intensity, or GHG emissions per unit of generation was 315 tonnes CO_2/GWh-net. The calculation is based on 116.4 TWh net energy generated and emissions of 36.7 million tonnes CO_2. Details about OPG's 1990 baseline and the methodologies to calculate GHG emissions from our operations have been described extensively in previous submissions to Canada's Climate Change Voluntary Challenge & Registry Inc. These reports can be obtained from the VCR Web site www.vcr-mvr.ca.

Gross Greenhouse Gas Emissions



Strategy to Manage Greenhouse Gas Emissions

OPG uses many options to manage emissions of GHGs and to meet its target, including:

- avoiding GHG emissions through operation of non-carbon emitting generation
- reducing GHG emissions with energy efficiency initiatives and emissions trading
- removing CO_2 from the atmosphere through carbon sequestration
- investing in research and development
- participating in the public debate to assist in the development of appropriate government policy
- increasing employee and public awareness about climate change.

Avoiding GHG Emissions

In 2002, OPG displaced the equivalent of over 71 million tonnes of CO_2 emissions through the operation of its nuclear and hydroelectric generation facilities and the development of Green Power. Darlington NGS and Pickering B NGS generated a total of 41,900 GWh-net; the equivalent amount of electricity generated by the fossil system would have produced 38.8 million tonnes of CO_2 emissions. In addition, the first Pickering A nuclear unit is expected to return to service mid-2003. Return-to-service of all Pickering A nuclear units will avoid up to 14 million tonnes CO_2 per year, over two per cent of Canada's total.

OPG's hydroelectric facilities generated 34,200 GWh-net, the equivalent amount of electricity generated by the fossil system would have produced 31.7 million tonnes of CO_2 emissions.

OPG-Evergreen™ Energy currently has about 146 MW in the green power portfolio. This capacity is in addition to the 25 per cent of OPG's renewable energy from hydroelectric sources. Total Evergreen™ Energy generation in 2002 was 737 GWh, which if produced by the fossil system would have released up to 683,000 tonnes of CO_2 emissions.

Reducing GHG Emissions

OPG reduces GHG emissions through investments in energy efficiency and emissions trading. In 2002, the in-house energy efficiency program achieved cumulative annual energy savings (since 1994) of 2,443 GWh and reduced CO_2 emissions by approximately 2.3 million tonnes. OPG also shares its energy efficiency expertise with the public through a number of innovative programs which are described in the main report.

GHG emission reduction credits (ERCs) trading is currently the primary mechanism by which OPG can reduce its net GHG emissions to levels equivalent to the 1990 baseline. By extending the time for reconciliation of the net emissions target with gross annual GHG emissions beyond one year, OPG plans to use its investment in ERCs to promote new projects to reduce GHG emissions. The extended true-up will also reduce OPG's risk related to the uncertainty about the rules for domestic and international emissions trading, specifically with regard to eligibility of sources in different geographic regions.

OPG currently has contracts in place for ERCs equivalent to 17.1 million tonnes CO_2. Offset projects that we have invested in include agricultural waste management, biomass, geological CO_2 sequestration, landfill gas (methane) destruction, and nitrous oxide abatement.

In July 2002, OPG announced the purchase of nine million tonnes of CO_2 ERCs. The ERCs were created from geological sequestration projects in Texas, Wyoming and Mississippi through the expansion of the construction of a CO_2 pipeline. The pipeline gathers locally produced CO_2 and transports it to crude oil producers for injection into mature oil fields to enhance oil recovery. The CO_2 used for this process would otherwise have been vented into the atmosphere by natural gas processing plants. The CO_2 is sequestered in underlying bedrock that formerly held the oil.

In 2001, OPG's gross GHG emissions were 11.1 million tonnes above the stabilization target and in 2002, 10.7 million tonnes above target. OPG requires a total of 21.8 million tonnes of CO_2 ERCs to offset GHG emissions in 2001 and 2002 to the stabilization target. OPG is currently 4.6 million tonnes CO_2 short.

OPG has also created CO_2 offsets through the sale of its fly ash, a non-hazardous by-product of generating electricity from coal. This ash has displaced some of the fossil fuels, limestone and electricity used in the production of cement. Fly ash is also used as cement replacement in concrete applications and in mine backfill. In 2002, fossil stations produced 1.10 million tonnes of fly ash. Approximately 430,000 tonnes of fly ash have been diverted from landfill, offsetting about 430,000 tonnes of CO_2 per year.

Removing CO_2 from the Atmosphere

OPG's tree planting program described in detail in the main report will offset about one million tonnes of CO_2 over the lifetime of the trees and will add at least 900 hectares of new forest in southern Ontario. During the period spring 2000 to spring 2002, over one million native trees have been planted throughout southern Ontario.

Participating in the Public Policy Debate

OPG has worked to assist in developing appropriate public policy in response to the Kyoto Protocol through participation in domestic and international climate change forums and negotiations. OPG has worked with many partners:

- Canada's Climate Change Voluntary Challenge and Registry Inc. (VCR)
- Canadian Electricity Association
- Canadian Nuclear Association
- Clean Air Canada Inc.
- e7
- Emissions Marketing Association
- Engaged Group
- Environmental Defense Partnership for Climate Action
- International Emissions Trading Association (IETA)
- Pembina, sponsor of Climate Change Solutions Web site
- Pew Center on Global Climate Change Business Environmental Leadership Council
- World Business Council on Sustainable Development (WBCSD)

Appendix C

Through its participation in the e7, OPG supports international efforts to address climate change. The e7 is developing three potential projects under the Clean Development Mechanism in Bhutan, the Chiloe Islands and the Galapagos, and working with the Central Electricity Generating Company of Jordan to prepare the project design document for a fuel switching project.

Increasing Employee and Public Awareness about Climate Change

Environmental events throughout the year provide the opportunity to increase employee awareness about climate change and greenhouse gas emissions, including:

- Earth Day
- Environment Week
- Pollution Probe's Clean Air Commute: OPG and Toronto Hydro participated in this annual event to see which of our two companies could achieve the highest level of employee participation; employees were encouraged to use less polluting and more sustainable methods of transportation and to track pollutant savings; 16.5 per cent of OPG Head Office employees participated and we avoided about 30 tonnes of air emissions that contribute to the formation of smog; OPG retained the Clean Air Commute Cup with results three times larger than Toronto Hydro's
- As a part of maintaining ISO 14001 certification of OPG's Environmental Management System, OPG employees receive training regarding environmental issues and their management
- OPG communications materials for employees and the public have addressed the issue of climate change and actions to reduce GHG emissions, e.g., POWER News, OPG Web site, and the OPG energy efficiency Web site

OPG sponsors community initiatives in Ontario as part of its Corporate Citizenship Program with the goal to improve the environment, enhance educational opportunities for young people, and build quality of life in communities where OPG operates. An initiative related specifically to climate change is sponsorship of the Pembina Institute's Climate Change Awareness and Action Education Kit (Ontario Supplement), a learning tool for high schools.

Investing in Research and Development

OPG puts a high priority on supporting research that can help to minimize the impact of electricity generation on the environment. Specific initiatives related to management of GHG emissions are described below:

- **CANMET O_2/CO_2 Recycle/Combustion Technology Studies**, phase seven of a multi-year program, to study coal combustion in a carbon dioxide enriched atmosphere
- **Solid Oxide Fuel Cell Demonstration Plant**, the world's largest pre-commercial solid oxide fuel cell (SOFC) combined heat and power plant based on energy-efficient fuel cell technology, currently installed at Kinectrics as a pilot plant demonstration will be moved to the University of Toronto Erindale Campus
- **Canadian Clean Power Coalition** seeks to demonstrate new and retrofit clean coal-based electricity generation technology by 2010. Other partners include TransAlta, SaskPower, ATCO, NSPower, EPCOR, Luscar Ltd, EPRI and IEA. The coalition receives funding from the Canadian, Alberta, Saskatchewan and New Brunswick governments

OPG also supports research into carbon sequestration:

- **BIOCAP Canada**, a Canadian research organization dedicated to finding biology-based solutions to the challenges of climate change
- **International Energy Agency (IEA) Greenhouse Gas Research & Development** program to study GHG capture and sequestration in deep ocean acquifers
- **University of Waterloo** study to model carbon capture and sequestration

VCR STATISTICAL SUMMARY

	2002	2001	2000
Generation (net GWh)			
Fossil	39,600	40,400	42,700
Hydroelectric (excl Evergreen)	34,200	33,100	34,400
Nuclear	41,900	47,800	59,800
Evergreen™ Energy	737	736	-
Total Generation	116,400	122,000	136,900
Gross Emissions (tonnes of CO_2 equivalent)			
Fossil	36,710,000	37,000,000	38,500,000
Nuclear	9,800	56,800	121,600
Total Emissions (A)	36,720,000	37,057,000	38,622,000
Emission Reduction Initiatives (tonnes)			
In-house Energy Efficiency[1]	2,265,000	2,171,000	1,922,000
Emission Reductions Credits (B)	6,100,000	11,056,800	12,621,600
Total Emissions Reduced	8,365,000	13,228,000	14,543,000
Net Emissions (tonnes of CO_2 equivalent) (A-B)	[2]	26,000,000	26,000,000
Emissions Avoided (tonnes of CO_2 equivalent)			
Nuclear Generation	38,800,000	44,000,000	53,879,800
Hydroelectric Generation	31,700,000	30,300,000	30,994,400
Evergreen™ Energy	683,000	641,200	-
Total Emissions Avoided	71,183,000	74,941,000	84,874,000

(1) Emission reductions resulting from improvements in energy efficiency are included in total emissions (A).
(2) Beginning in 2001, OPG implemented an extended true-up, see text.

The Sustainable Development Policy

Policy Statement: Ontario Power Generation is committed to becoming a sustainable energy development company. We will work towards this goal by applying the principles of sustainable development[1] to the generation and sale of electricity and related energy products and services. Enhanced environmental performance and increased competitiveness will be achieved through continual improvement in:

- Ecosystem protection,
- Energy and resource use efficiency,
- Pollution prevention, and
- Community relations.

Requirements: OPG will:

- Meet all legislative requirements and voluntary environmental commitments, with the objective of moving beyond compliance.
- Maintain environmental management systems consistent with the International Organization for Standardization (ISO) 14001 Environmental Management specification.
- Integrate environmental and social factors into our planning, decision-making and business practices.
- Apply the precautionary principle to assess the human health risks and environmental damage resulting from our operations, and any potential risks and impacts from new technologies and processes, even where scientific consensus has not yet established the level of risk or damage. Implement cost-effective mitigation measures for impacts that cannot be avoided.
- Develop the use of renewable energy and energy efficient technologies.
- Educate, encourage and empower employees to conduct their activities in an environmentally–responsible and sustainable manner.
- Measure and communicate our progress towards achieving sustainable development.

OPG management is accountable for the implementation of this policy.
The Executive Vice President and Corporate Secretary is accountable for monitoring and reporting progress in implementing this policy on behalf of the President and CEO.

Board of Directors
Date: January 31, 2000

[1] Sustainable development is defined as "development that meets the needs of the present without compromising the ability of future generations to meet their own needs." (World Commission on Environment and Development, 1987).

PLEASE RECYCLE

Materials used in this report are environmentally friendly. Cover and text stocks are recycled and recyclable, with a minimum of 10 per cent post-consumer waste. Vegetable based inks have been used throughout.

We welcome your comments or any questions you may have about this report.

Please call: Vice President, Sustainable Development
at 1-866-592-6744, or e-mail us at webmaster@opg.com

Our mailing address is: Ontario Power Generation, 700 University Avenue, Toronto, Ontario M5G 1X6

Visit our Web site at www.opg.com

ONTARIOPOWER
GENERATION